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FULL E-SPEED AHEAD?

John Gantz: The economy is drooping, but there's no slowdown in e-business implementations. Page 27

BUSINESS CUM LAUDE

Universities and businesses are finally teaming up to teach students what they really need to know about business *and* IT. Page 42

DATA DIVERGENCE

To keep up with growing data storage, users need better tools that handle heterogeneous systems. Page 62

COMPUTERWORLD

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USERS: ORACLE'S PRICES TO BLAME

Low earnings due to economy, Ellison says

BY DAN VERTON

Oracle Corp. last week blamed the sluggish economy for its failure to meet its third-quarter earnings forecast. But some users are telling a different story, faulting the software vendor for refusing to budge on what they see as exorbitant pricing.

"Now that the dot-com bubble has burst and a healthy dose of reality has been injected, Oracle's totalitarian license scheme is coming back to bite them in the ass good and hard," said Gary Norwell, a database developer at Kitchener, Ontario-based Hybrid Turkeys, a division of Netherlands-based Nutreco Holding NV.

"Venture capital is all but dried up, and the last thing a start-up will do is spend the first $600,000 on Oracle for redundant Solaris servers," said Joel Shandelman, chief technology officer at Optionable Inc., an Internet-based options brokerage in New York. "They are looking elsewhere for less expensive [database] software."

Oracle last week announced that its third-quarter income

Oracle, page 14

AT A GLANCE

Subpar

Oracle's third-quarter results:

Total revenue: $2.7B

Income: $583M, $0.10/share

Application software sales: $249M, up 25%

Database software sales: $823M, up 6%

DUELING EXCHANGES MAKE BIG PLANS

But major online retail markets face long haul

BY CAROL SLIWA
AMSTERDAM

In sharp contrast to the relentless downbeat news on the Internet economy, the retail industry's two major exchanges last week outlined ambitious plans to use their fledgling online marketplaces to cut costs and to improve supply-chain efficiencies.

At the Global Retail Technology Forum here, executives from the for-profit GlobalNetXchange and the competing nonprofit WorldWide Retail Exchange insisted that their marketplaces will move well beyond reverse auctions. They pledged to escalate collaborative planning, forecasting and replenishment efforts and to complete transaction hubs among other goals this year.

But whether the competing exchanges, both marking their one-year anniversaries, will be able to pull off their lofty goals remains an open question.

While major players at the conference expressed confidence in the exchanges, several retailers and analysts contin-

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SABRE SELLS IT BUSINESS TO EDS

American Airlines plans to pull some application development back in-house

BY MICHAEL MEEHAN

Sabre Holdings Corp. last week announced a $3 billion deal to sell its airline IT outsourcing business and its internal technology assets to Electronic Data Systems Corp. As part of the deal, Sabre outsourcing customer American Airlines Inc. said it will pull some of its application development activities back in-house.

IN-HOUSE VS. OUTSOURCED

American plans to absorb approximately 250 Sabre employees, many of whom worked for American when Sabre was owned by the airline's parent company, AMR Corp. American said the added staff would develop applications related to revenue management and flight capacity planning.

In 1976, American formed Sabre from its IT backbone, and it spun it off as a separate company last March. Since then, Sabre has been responsible for the IT work surrounding American's scheduling and pricing operations.

"We just wholesale outsourced the IT, and we weren't necessarily thinking about the

Sabre, page 77

MARTA NASCIMENTO/IDGNS

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As FedEx and UPS parcels zoom on their overnight journeys — with reporters Bob Brewin and Linda Rosencrance close behind — data about the packages travels through trans-Atlantic WANs, wireless LANs, mobile computers and countless bar code scanners. That's why customers can track their shipments on the Web, every step of the way.

Stories begin on page 58, with more coverage at www.computerworld.com/package.

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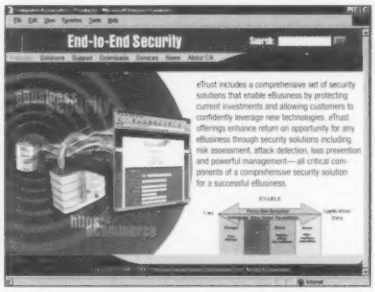

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THE ARCHITECTS OF E-COMMERCE

Transitioning a brick-and-mortar company into a competitive e-commerce player isn't easy. To pull it off, you need a technologist at the helm like Walgreen's Tim McCauley (left), who's fluent in the technology side of the organization and also understands the business side. Page 66

COMMUNITY COLLEGE GRADS – WHO NEEDS 'EM?

Think community college students are just biding time until a real degree comes along? Think again. Two-year programs are producing graduates like WorldCom's Mitch Jones (right), who are more skilled than those in years past. Many of these students are career changers with years of workforce experience. Page 40

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33 PRESIDENT BUSH'S plan to split the INS into two divisions — one focused on border patrol, the other on green card/visa processing — is a move that many say would speed the hiring of foreign workers.

WORKSTYLES

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ONLINE

After reading this issue's cover story tracking a parcel from Paris to Memphis, see reporter **Bob Brewin**'s first-person account of the fast-paced journey: **AARP Member Tries to Keep Up With FedEx Package**.
www.computerworld.com/package

FedEx driver Phillipe Loichot

House Majority Leader **Dick Armey** (R-Texas) outlines his views on the controversial Health Insurance Portability and Accountability Act in our **Security Community**.
www.computerworld.com/security

Are we entering an era of "digital isolationism?" **Rowland Archer** of Haht Commerce Inc. outlines his views in the **E-Commerce Community**.
www.computerworld.com/ecommerce

OPINIONS

26 PATRICIA KEEFE argues that amid the angst caused by an economic slowdown, workers and managers must come together to chart the future of the workplace.

26 PIMM FOX writes that the debate over new Internet domain names clouds some serious technology issues.

27 JOHN GANTZ claims that despite the financial slump, there will be no break from e-business implementations.

28 DON TAPSCOTT explains how Linux has knocked down some walls to collaboration through technology.

28 WILLIAM M. ULRICH says IT must change the way it addresses the implementation of functional system requirements in the "E" era.

36 ED YOURDON writes that IT projects can teach better lessons if team members can gather for "minipostmortems" after different stages.

78 FRANK HAYES opines that after Microsoft dissed the open-source software movement, the vendor is beginning to embrace it — but will likely do so in its own way.

AT DEADLINE

IRS Online Filing Security Faulted

A report released last week by the General Accounting Office uncovered "serious weaknesses" in the security of the Internal Revenue Service's electronic filing systems that placed taxpayers' personal data at risk during the 2000 tax season. During tests last May, GAO auditors were able to breach the IRS's online filing system using a standard handheld computer. Vulnerabilities stemmed from the agency's failure to take several basic security precautions, including restricting access to the system, properly configuring operating systems, enforcing password protection and using encryption to secure tax returns.

NCR Files Patent Suit

NCR Corp. in Dayton, Ohio, last week filed a lawsuit that could send ripples through the handheld market, claiming that it possesses patents covering the types of devices developed by Palm Inc. and Handspring Inc. NCR claims to hold two patents governing the creation and sale of handheld devices dating back to 1987, according to documents filed in U.S. District Court in Delaware. Santa Clara, Calif.-based Palm and Mountain View, Calif.-based Handspring weren't immediately available for comment.

Privacy Rules Get Teeth

In a move that could have repercussions for the increasing number of failing dot-coms, the Senate last week voted 83-15 to approve a bill that toughens rules on when bankrupt companies can sell customers' personal information. The legislation forbids companies from selling customers' personal information at the time of bankruptcy if they had previously promised they wouldn't do so.

Short Takes

San Jose-based wireless data networking company METRICOM INC. said it plans to lay off about one quarter of its employees nationwide. . . . IBM announced Friday that it will make its storage products Linux-compatible for both hardware and software.

Online Retailers Call For Simpler Tax Rules

Claim cost of software, personnel make sales tax collection a burden for dot-coms

BY PATRICK THIBODEAU
WASHINGTON

THE U.S. SENATE Commerce Committee, which is considering two controversial issues related to Internet taxation, was told last week by online retailers that dot-coms shouldn't be forced to collect sales taxes unless state tax rules are simplified and retailers receive some reimbursement for collection costs.

Barring "substantial simplification" that creates more uniform tax rules at the state level, imposing sales tax collection obligations on Internet-based retailers that don't have widespread physical operations would create "an unreasonable burden," claimed Robert Comfort, vice president of tax and tax policy at Amazon.com Inc. in Seattle.

Comfort, in an interview after he testified at a Commerce Committee hearing, said complying with any tax collection requirement would also be expensive — potentially costing millions of dollars in software development and personnel expenses. States can't "reasonably ask us to become a collector of their taxes . . . and make us bear the whole cost," he said.

SEN. McCAIN: "The Internet economy is not bulletproof."

Older Rules Easier

Under two previous rulings by the U.S. Supreme Court, a business isn't required to collect sales taxes unless it has a physical presence in the state where the customer resides. State governments are trying to get Congress to change that restriction, fearing that they will eventually lose significant sales tax revenue if so-called remote sellers continue to be given a free pass from collecting taxes.

At last week's hearing, the Commerce Committee heard conflicting views on how to approach the Internet tax issue. But other corporate executives who testified backed up Comfort's contention that companies can't begin to consider collecting sales taxes until the rules are simplified. The retailers want one tax rate per state rather than having to deal with thousands of taxing districts and uniform definitions from state to state on what constitutes a taxable item.

"Allowing state and local governments to unleash economic anarchy . . . could have long-term devastating effects on the economy, business and employment," said Frank Julian, operating vice president and tax counsel at Federated Department Stores Inc. in Cincinnati, which owns Bloomingdale's, Macy's and other large retail chains.

Also permeating the hearing was the dot-com shakeout that has resulted in the shutdown of numerous e-commerce ventures and cutbacks at Amazon and other top online retailers. "The Internet economy is not bulletproof," said Sen. John McCain (R-Ariz.), the committee's chairman. "The plunge in the Nasdaq is a clear sign that we need to be mindful of the economic effects of our tax policy decisions."

The Commerce Committee is mulling a pair of tax-related issues: whether online retailers should be required to collect sales taxes, and whether the Internet Tax Freedom Act of 1998, which barred "new and discriminatory" taxes singling out e-commerce transactions, should be extended beyond its scheduled October expiration date.

McCain voiced reservations about forcing remote sellers to collect sales taxes. "I have not seen evidence of the sales [tax] revenue losses predicted by the states and local governments," he said.

But he conceded that brick-and-mortar retailers "have a legitimate fairness argument" when they complain about losing business from customers who want to save on taxes by ordering over the Internet. McCain said he would work to pass "consensus" legislation that incorporates the concerns of all sides in the tax debate.

Tax Burdens May Shift

A group of 32 states is working to develop a sales tax simplification proposal, with officials involved in that process acknowledging that the rules have to be streamlined to make it easier for companies to comply with any new collection requirements. But critics say the effort is becoming too complicated because of disagreement among the states on how to proceed.

Some state officials warn that tax burdens will have to be shifted to other revenue sources if they don't gain the ability to charge sales taxes on e-commerce transactions. For example, Wyoming Gov. Jim Geringer testified at the hearing that retail sales tax losses might be made up by increasing taxes on natural gas and other energy sources.

Geringer also said the states are seeking only to be allowed to do what the federal government already does. Federal excise taxes are collected on Internet transactions such as the purchase of airline tickets, he pointed out.

E-Retailers Want A Simpler World

Online retailers say they're willing to collect sales tax if certain conditions are met:

- They are reimbursed for some portion of their tax collection expenses.
- There is one tax rate per state instead of the thousands of taxing districts that currently exist.
- All states agree on uniform definitions of what constitutes a taxable item.

Economic Downturn Eases Demand for IT Talent

Dot-com closings boost talent stream

BY JULEKHA DASH

After a long spell of severe labor shortages, IT employers are starting to get some relief.

A recent report from the Federal Reserve System suggests that the IT talent war has abated somewhat, despite the low U.S. unemployment rate of 4.2%. Known as the Beige Book, the federal report concluded that the respite has resulted from the recent increase in layoffs and scaled-back projects.

"Overall hiring activity is slowing down," said Ilya Talman, president of Chicago-based IT recruiting company Roy Talman & Associates Inc. "There is still a shortage, but the skills that are in shortage" are those held by "top-caliber" workers with experience in the latest technologies, Talman said.

Not too long ago, employers in tight labor markets were courting IT talent with everything from expense-paid vacations to BMWs. But nowadays, some Silicon Valley firms have

But Massachusetts Lt. Gov. Jane Swift, who also testified at the hearing, said she opposes any expansion of tax collection obligations on retailers because it could "hinder growth" at e-commerce companies. "It would be a grave mistake on our part to start taxing Internet commerce before it has a chance to establish itself," Swift said.

Increased Fees

Online retailers would also have to pay more money to credit card firms if they're required to collect sales taxes, Comfort said. Credit card companies collect a percentage of each bill that's charged, and Comfort estimated that expanded sales tax obligations could increase Amazon's fees by $7 million, based on the $2.76 billion in net sales it reported for last year.

However, Comfort added that Amazon isn't opposed to the idea of collecting sales taxes, provided the rules are simplified. And, he said, the addition of sales taxes on e-commerce transactions wouldn't put online retailers at a competitive disadvantage with brick-and-mortar stores.

"We're confident that we can compete [on the basis of ease and convenience]," Comfort said. ◗

MOREONLINE

For complete coverage of IT news from Washington, visit our Web site.
www.computerworld.com/more

Ford Opens IT Hub in India to Save Millions

Sends CAD/CAM, other development tasks overseas

BY LEE COPELAND GLADWIN

Ford Motor Co.'s accounts payable processing unit in India typically loses power three or four times each day. On top of that, it's difficult to establish a telephone connection there. Meanwhile, employee turnover for IT staff in this region is an eye-popping 30% per year.

But these daunting challenges won't stop the world's second-largest automaker from opening a major IT hub in India later this month.

Dearborn, Mich.-based Ford disclosed plans last week to shift much of its computer-aided design and manufacturing (CAD/CAM) development, e-mail processing and application development tasks to a subsidiary it's setting up in Chennai, India. Although Ford already has limited IT operations in that country, the latest effort is expected to help the automaker cut its costs by an additional $30 million to $60 million per year because IT labor costs in India are a fraction of those in the U.S.

Eventually, Ford hopes to make the site a mainstay of its global technology operations, said John Larson, director of Ford Asia Pacific — Information Technology.

"Nobody is doing exactly what we're doing," said Larson. "If it is successful, we want to see [the Indian facility] take on more responsibilities, as long as it's cost effective."

Advantages Abound

"There are advantages to having IT systems in India, in terms of the costs, time difference and other features," said Gerard O'Shea, an analyst at The Yankee Group in Boston.

For instance, according to Yankee Group research, it costs $12 for a U.S. company to field a 30-minute customer support call in the U.S. and about $3 to $5 for an e-mail response. By contrast, those costs may be significantly lower in India, O'Shea said.

Ford plans to spend $10 million on the first phase of getting the subsidiary, Ford Information Technology Services of India, up and running.

That investment will cover the equipment and technology needed to operate the IT hub but not the costs for personnel. To handle its labor, Ford will outsource all of its software development, e-mail processing and other IT management services — a staff of about 700 to 1,000 workers — to Indian contractors, Larson said.

Numerous U.S. firms, such as New York-based American Express Co. and Benton Harbor, Mich.-based Whirlpool Corp., have also outsourced call center support to Indian contractors, whose personnel costs are significantly lower, analysts said. But Ford is planning to forge ahead with another aspect of customer care: e-mail processing.

"Its pretty hard to send or receive an e-mail [from] Ford, because we have never had the capacity to do e-mail processing," Larson explained.

The e-mail processing center will be managed by Percepta, a joint venture that Ford launched last April with Denver-based Teletech Holdings Inc. to improve its customer support services.

Ford isn't the only big company that's turning to IT to help pare costs during tough times. Last week, Fairfield, Conn.-based General Electric Corp. announced plans to step up its software development outsourcing to India to the tune of about $400 million this year, compared with the $280 million it spent last year.

Larson said GE's success influenced Ford's decision to open the hub in Chennai.

Challenges Remain

But Ford will still have to contend with India's wobbly infrastructure and high turnover rates for IT staff.

To meet those challenges, Ford is planning several steps. The Chennai subsidiary will link to Ford's global private network using a 2M bit/sec. circuit that runs through Singapore. Ford plans to double the capacity of the network to 4M bit/sec. by year's end.

And to help lower its IT turnover rates in India, Ford plans to offer U.S. and European work visas to the top 15% of the outsourced developer staff. Most developers "are going to move outside India anyway, so they might as well work on Ford programs," Larson said. ◗

MORE THIS ISSUE

Companies look overseas for e-mail, call center outsourcing. **see page 18.**

Shift in Gears

Ford plans to open a major IT hub in Chennai, India, on March 29:

- The **80,000-square-foot facility** will cost about $10 million to equip.
- It will handle **CAD/CAM** development, e-mail processing and application development.
- The staff will include **700 to 1,000** outsourced developers and e-mail processors.
- Ford expects to **save $30 million to $60 million** in costs per year.

SOURCE: FORD MOTOR CO., DEARBORN, MICH.

stopped using signing bonuses as a recruiting tool, according to the Beige Book.

Dot-coms, which were once the nemeses of recruiters at brick-and-mortar firms, have become their allies, supplying them with a steady source of talent as they cut back their staffs or go out of business.

Barbara Kessler, human resources director at SNL Securities LC, said the Charlottesville, Va.-based company's last three IT hires were employees at dot-coms "on shaky ground."

In a half-dozen cities — Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas and San Francisco — employers noted a larger pool of available workers, reported the Beige Book.

Maggie Yunker, a human resources manager at Gobosh, an IT consulting firm in San Jose, said finding qualified IT workers on Maynard, Mass.-based Monster.com's job board has become much easier than it was a year ago.

For instance, last year, when she wanted to hire someone with a very specialized Cisco certification, she had to hire a foreign worker with an H-1B visa. Today, "I know if I did a search [on a job board], I could find somebody," Yunker said.

With more available talent, some companies are splurging less on salaries. Java programmers and customer relations managers who earned $120,000 six months ago now accept salaries that are 20% lower, said Talman.

One Chicago client "will not consider paying over $100,000 for a Java developer, no matter how good," Talman said. "They were not saying this six months ago."

But many regions still have yet to see any relief from the labor crunch. SAS Institute Inc. in Cary, N.C., plans to hire more foreign workers this year because it has trouble finding qualified IT workers in an area where the unemployment rate is just 2.6%.

High-Level Skills Are Key

Eileen Cassini, vice president of information services at Las Vegas-based Harrah's Entertainment Inc., said there's no "excess supply" of skilled workers in Memphis, where the firm's IT department is headquartered.

Harrah's certainly doesn't have plans to scale back IT, she said. In fact, the company plans to add 20 to 30 IT workers to its 240-person staff, she said.

In Dallas, the hiring crunch has eased a bit when it comes to low-level IT employees, according to Amy Tingleaf, a technical recruiter at Southwest Airlines Co. "I've seen a little bit of a difference," she said. "It's been a little bit easier to find project managers now."

But finding high-level C++ developers and MQSeries middleware candidates is still a challenge, Tingleaf said.

Overall, IT workers seem to be less in the driver's seat. Job hunters could once command a 25% raise by switching employers, said Talman. Today, however, he advises workers to "stay where you are. Nobody's going to pay it." ◗

The Right Stuff

Employers say the following IT skills are in high demand:

- **Java Enterprise Edition, SQL Server database administrators**
  Ilya Talman, Roy Talman & Associates (recruiter)
- **Java programmers, networking and e-commerce specialists**
  Eileen Cassini, Harrah's Entertainment
- **Java architects, senior developers, wireless/telecommunications experts**
  Craig Silverman, Hall Kinion & Associates
- **High-level C++ developers, MQSeries middleware specialists, high-level data warehousing experts**
  Amy Tingleaf, Southwest Airlines

Retailer Target Rolls Out CRM System

Technology instantaneously updates information to help improve service

BY JAIKUMAR VIJAYAN

TARGET CORP. this month began to roll out a new customer relationship management (CRM) system that was designed to not only combine customer information from its 900 stores, Web sites, call centers and catalogs but also update that information instantaneously.

For instance, if a Target customer shops on the company's Web site and decides to call customer support a few minutes later, the call center representative will already have information on that shopper's most recent Web transaction.

Having access to this kind of up-to-the-second customer information should help Target improve the quality of customer service and open the door to more cross-selling opportunities, according to Deb Bauman, vice president of technology services at Minneapolis-based Target.

"We wanted to improve the whole customer communication process," Bauman said.

Zero Latency Front-runner

Target is among the few pioneers trying to build so-called zero-latency enterprises, in which the flow of customer information across the organization is greatly accelerated, according to Roy Schulte, an analyst at Gartner Group Inc. in Stamford, Conn.

Among the companies pushing hardest to build these kinds of enterprises are airlines and financial services firms, said Schulte.

With traditional data warehouses, customer information is cleansed and updated in batch fashion at specific intervals of time.

But in zero-latency enterprises, the emphasis is on combining real-time transaction processing capabilities with the data mining and analytical processing functions of data warehouses, Schulte said.

"The idea here is that you are doing online, real-time business intelligence" using live information collected from various divisions within the enterprise, he added.

While such technology is relatively uncommon today, it's poised for fast growth, said Gene Alvarez, an analyst at Meta Group Inc. in Stamford, Conn.

"By 2002, 2003, we believe the leading bricks-and-clicks e-tailers will have interwoven their operations infrastructure and CRM technologies," Alvarez said.

Building such an enterprise is no trivial task because it involves tying together information and databases from multiple customer channels, according to Alvarez.

To build its new CRM environment, for instance, Target had to cleanse and meld data from 20 different databases and CRM systems into one giant multiterabyte repository containing more than 50 million unique customer records, Bauman said.

Layered on top of that is a set of enterprise application integration tools, messaging software, transaction brokers and rules engines that manage the flow of information to and from the database and multiple customer channels and applications.

Target's new CRM environment is largely based on Compaq Computer Corp.'s Hiamala fault-tolerant server technology, database and Non-Stop Kernel operating environment. Target, which started work on the project last July, wouldn't disclose its cost or the estimated return on investment.

AT A GLANCE

Targeting Customers

To build its new CRM application, Target:

- Merged information from 20 different databases into one multiterabyte repository with 50 million unique customer records.
- Used enterprise application integration tools, messaging middleware, rules engines and Java application server technology to integrate applications and transport data between the various applications and the database.

Large Banks Try Web-Site Outsourcing

ABN Amro/Digital Island hosting trial scores 25% savings

BY MARIA TROMBLY

ABN Amro Bank NV, the world's 16th-largest bank, announced last week that an experiment with outsourcing Web hosting has paid off with savings of 25%.

The bank's outsourcer, San Francisco-based Digital Island Inc., is hosting eight Compaq 5500R data servers in a London data center. Digital Island is also providing networking and security for the Amsterdam-based bank's global financial markets e-commerce site.

It's an unusual move for a large bank, said Octavio Marenzi, the managing director of Celent Communications LLC, a consulting firm in Boston.

"Typically, the smaller banks do this," Marenzi said, explaining that large banks tend to have some qualms about outsourcing because they're concerned about control and security.

DEBRA ROSSI says security is a big concern for large banks considering outsourcing.

Security is a major concern, according to Debra Rossi, executive vice president of business Internet services at San Francisco-based Wells Fargo & Co., which hosts its Web sites in-house.

"You want to have proper controls in place to manage customer information," said Rossi.

ABN Amro's outsourcing decision is unusual not only because of the bank's size, but also because it deals with a corporate banking service.

"It's more frequent on the retail side," Marenzi said.

Downsides to outsourcing include loss of control and increased complexity.

"There's one more vendor relationship to manage," Marenzi said. "If something goes wrong, it may be harder to track down where."

On the plus side, the vendors are able to spread the costs over a large number of users — making a 25% savings figure reasonable, even conservative, he said.

According to Digital Island spokesman Paul Abbott, the ABN Amro site handles $100 million in transactions daily and focuses primarily on offering bonds and foreign exchange transactions to the top 250 global institutional fund managers.

The bank expects the site to handle $1 billion in daily transactions within a year.

"ABN Amro expects its wholesale client business to increase exponentially in the coming years," David Woods, the bank's managing director for e-commerce, treasury and fixed income, said in a statement.

Outsourcing the hosting offered a scalable and a secure environment for the site, he added.

Faster to Market

By going with Digital Island rather than hosting the site in-house, the bank was able to get to the market faster and save money, according to Abbott.

Digital Island takes care of the physical equipment and the operating system, he said. "We control the physical security and the logical security in and around the box. The bank manages and owns the applications," said Abbott

Other Digital Island bank customers include New York-based J.P. Morgan Chase & Co., whose backup system is hosted by Digital Island.

The main reason the bank chose to outsource this function was speed of implementation, said Edmond Altonji, vice president and project manager of LabMorgan, J.P. Morgan's technology group.

According to Altonji, LabMorgan selected Digital Island in June, and the backup site was up and running by the end of September.

"We also wanted it off-site," said Frederick Loder, LabMorgan's vice president and director.

LabMorgan wouldn't disclose the costs involved in the project, but Altonji said that cost savings weren't a factor in the decision. "We did not believe that an external provider could do it cheaper than we could ourselves," he said.

Currently, the bank uses Digital Island to mirror its static Web pages. Individual business units also have the option of serving dynamic pages and offering backups of business applications.

Sometime in the second half of the year, the bank also hopes to begin using the Digital Island facility to handle some of its ongoing Web traffic in order to improve the performance of its Web site.

Loder added that the bank didn't have to sacrifice security in the process.

"We are able to control the architecture, have a dedicated network and proscribe the security requirements that meet our standards," he said. "From a security perspective, it's just like our own infrastructure. We have remote full monitoring capabilities, diagnostic capabilities. It's a cage with servers in it, and we do everything else. [Digital Island] won't even enter the cage without our permission."

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BRIEFS

New Palms Released

Santa Clara, Calif.-based Palm Inc. is announcing today that it's upping the ante in the handheld wars with the release of two products. The monochrome Palm m500 ($399) and the color m505 ($449) are the size of a Palm V and feature the new Palm OS 4.0, which has improved security. The Palm m500 is slated for release next month; the m505 is due in May. A new universal hot-sync port will make all existing accessories obsolete but standardize all future ones.

Powell Seeks Funds For Department Nets

Secretary of State Colin Powell is asking Congress to approve $270 million in next year's U.S. State Department budget to increase communications and information sharing, particularly in the department's classified networks. Powell told the Senate Budget Committee last week that the money will be used to modernize the State Department's secure LAN, including its e-mail and word processing capabilities. The department's total budget request is about $8 billion.

Profiling Bill Reopened

Sen. Richard Shelby (R-Ala.) last week reintroduced a bill that would require financial institutions to get customer approval prior to sharing personally identifiable information. The Freedom from Behavioral Profiling Act would amend the privacy restrictions in the Gramm-Leach-Bliley act of 1999. The bill ran into opposition on the Banking Committee last year.

Supercluster Takes Off

The Boeing Co. has implemented a 96-server supercluster developed by Linux Networx Inc. in Sandy, Utah, and powered by Athlon processors from Advanced Micro Devices Inc. in Sunnyvale, Calif. The supercluster will run applications that support Seattle-based Boeing's latest rocket development initiative, the Delta IV Evolved Expendable Launch Vehicle program. The system will simulate the way a rocket's fuel and fluids will act during flight, according to Boeing.

Cybercrime Costs On the Rise in U.S.

$377.8M price tag labeled 'conservative'

BY DAN VERTON

CYBERCRIMES cost some of the top companies in the U.S. a total of at least $377.8 million last year, according to a new survey by the FBI and an association of IT security workers.

The survey, released last week by the San Francisco-based Computer Security Institute (CSI) and a team at the FBI's San Francisco office, found that almost two-thirds of the 538 CSI member companies, government agencies and universities questioned suffered financial losses because of computer security breaches during the past 12 months.

However, total financial losses are likely much higher than reported, said Richard Power, editorial director at the CSI. Although 85% of the security employees who took part in the annual survey detected breaches, only 35% could or would quantify their financial losses.

"I would characterize the results that were quantified as conservative. This is serious crime," said Power. Most of the organizations surveyed are private sector companies, and they "represent a significant chunk of mainstream American business," Power added.

Losses Mounting

Last year's survey cited $265.5 million in damages — but it had only 249 respondents.

This year, thefts of information and financial fraud accounted for $244.2 million of the losses reported — a figure that was almost equal to the total losses listed in those categories for the previous three years combined, according to the CSI and the FBI. Other categories included losses due to viruses, laptop theft, sabotage and system penetration.

"As companies are getting better at quantifying their losses, we're beginning to see what crime is going to look like in the Information Age," said Power. "We're seeing a level of sophistication that goes beyond the stereotypical hacker."

That sophistication and the size of the businesses being targeted may explain the hefty price tag associated with a relatively small number of the breaches. The CSI and the FBI said a group of just 34 respondents reported more than $151 million in losses from thefts of proprietary data, a per-company average of almost $4.5 million. A group of 21 companies reported $92.9 million in losses from financial fraud.

As part of the new survey, 267 firms reported more than $41 million in combined losses resulting from unauthorized employee access to systems or abuse of network access privileges by insiders.

All told, 91% of those surveyed reported some sort of insider abuse of network access during the past year.

MOREONLINE

For more information about security, visit our security page:
www.computerworld.com/security

Feeling the Loss

The most expensive types of cybercrime:

Information theft: **$153.2M**

Fraud: **$91.2M**

Viruses: **$45.3M**

Insider Internet abuse: **$35M**

BASE: 538 COMPANIES, GOVERNMENT AGENCIES AND UNIVERSITIES THAT ARE CSI MEMBERS.

SOURCE: COMPUTER SECURITY INSTITUTE, FBI

Brinks Breaks Into Net Security Market

BY DAN VERTON

The company that once guarded the bat used by Hank Aaron when he broke Babe Ruth's home run record in 1974 and the diamond Richard Burton gave to Elizabeth Taylor has quietly entered the Internet security market.

Irving, Texas-based Brinks Inc. is best known for its armored cars and 142 years of experience guarding bank loot. Now, Brinks' home security subsidiary, Brinks Home Security Inc., has teamed with Hyperon Inc. to offer an intrusion detection and response service to companies that can't afford a full-time IT security staff.

Brinks Internet Security, as the alliance between Brinks Home Security and Hyperon is called, marks the first time a traditional brick-and-mortar security firm like Brinks has entered the Internet security market, although Pinkerton has a network security consulting unit.

Hyperon is a consulting and outsourcing firm that specializes in intrusion detection and incident handling. It places an intrusion detection system on a customer's network that is monitored remotely through a central monitoring facility.

Fifteen Brinks agents have been deployed to the new Brinks Internet Security venture, which is co-located with Hyperon in Wilmington, Del. Some monitoring will also take place at Brinks' operations center in Irving, where 120 Brinks agents monitor the homes and businesses of 700,000 Brinks clients.

Business Enabler

Brinks' entry into the network security market makes it clear that "the assets that make up a company's value are changing," said Russ Gates, global managing director of technology risk consulting at Arthur Andersen LLP in Chicago. One of the challenges for Brinks will be looking at security as a strategic business enabler and not strictly as a protective barrier, he said.

"Brinks is not known as a high-tech company," said Bob Allen, chief operating officer at Brink's Home Security. "This is an expansion of the brand name and a logical extension that gets us into the high-tech market."

Brinks and Hyperon plan to issue a "Protected by Brinks" logo for use by e-commerce sites as a sign of assurance, said Allen.

The companies are just now entering into discussions with several financial services companies and plan to extend the service to the manufacturing industry, said Hyperon CEO Jim Molini.

Although physical and IT security will eventually merge, "now is not the time," said Steve Hunt, a security analyst at Cambridge, Mass.-based Giga Information Group Inc. "The market is too distracted and end users spread too thin to replace a system that already works well enough. Neither Brinks nor Hyperon will be able to reach the e-business purchasers or the CIOs in order to make a sale that bridges the two security worlds."

A network administrator at an Internet service provider in Virginia said he liked the idea of combining physical with Internet security but added that the saturation of the market could make it tough for Brinks to win major customers.

Keith Morgan, a network security specialist at Nitro, W. Va.-based Terradon Communications Group LLC, a software developer for Fortune 500 firms, said it's the Hyperon-Brinks combination that could make a difference with users, not simply the Brinks name. "The skill set required for data security just doesn't compare at all with physical [security]," he said. However, "everyone loves a one-stop shop."

AT A GLANCE

The Initiative

- Combines Brinks' real-time monitoring and response capabilities with Hyperon's intrusion-detection systems
- Monthly charges range from $2,000 to $7,500, depending on level of service
- Services include basic alarms through full response

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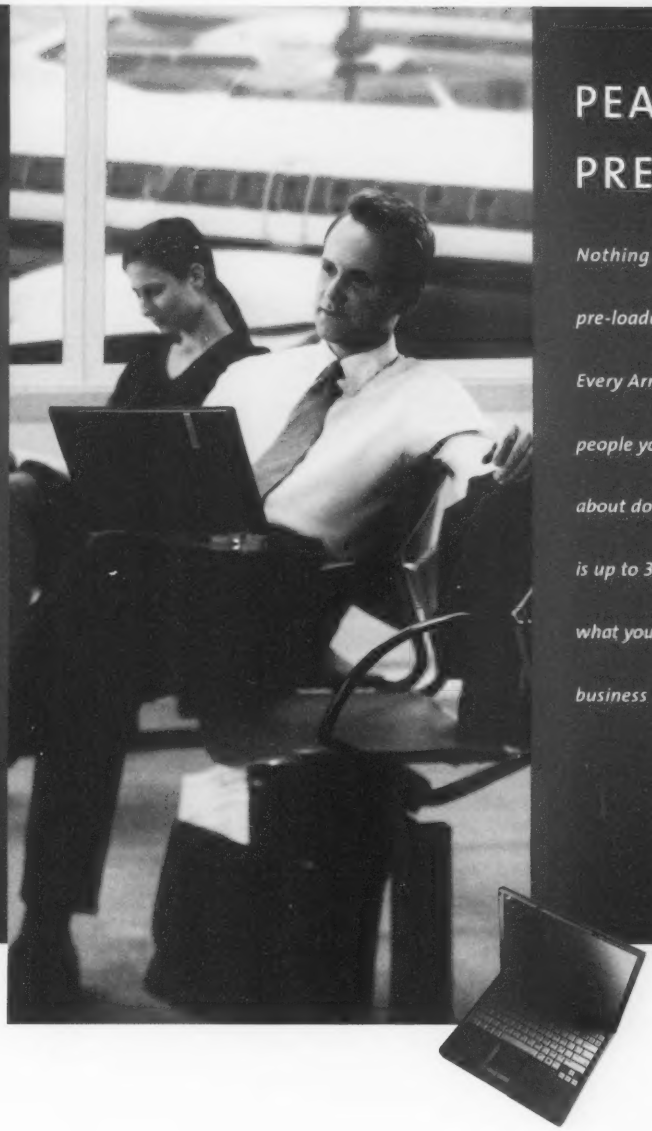

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IBM Enhances WebSphere for Mainframes

Adds J2EE support

BY JAIKUMAR VIJAYAN

IBM is trying to make it easier for companies to take advantage of a mainframe's traditional reliability and scalability for deploying emerging e-business applications.

The company last week announced an enhanced mainframe version of its WebSphere e-commerce software suite featuring support for Java2 Enterprise Edition (J2EE) technology.

J2EE provides for a component-based and platform-independent approach to application development. Applications that are built using J2EE aren't tied to any products or vendor application programming interfaces.

As a result, WebSphere for z/OS and OS/390, to be available at the end of the month, will let IBM users take J2EE-based applications that were developed on other platforms and run them unchanged on an IBM S/390 or an eServer z900 mainframe, said David Chew, a director at IBM's WebSphere business unit.

Websphere is an application server that enables developers to design, develop and assemble platform-independent Java applications.

Westlaw.com, a part of West Group, a $1.4 billion Eagan, Minn.-based legal research and information services firm, is using the beta version of the WebSphere software to link its mainframe-based data sources to new XML-based sources, said John Northway, a software engineer at the company.

The software has automated and replaced much of the management of the homegrown Java-based application server that Westlaw had developed to handle this integration, Northway said.

Support for technologies such as J2EE also makes it easier to integrate and link new applications with OS/390 applications, said Dale Vecchio, an analyst at Stamford, Conn.-based Gartner Group Inc.

"The mainframe is back on the table as a viable platform, particularly in companies that have large installations," Vecchio said. "A lot of it has to do with the complexity of managing large Unix and [Windows] NT server farms and the inability to get the quality-of-service levels they've established [with mainframes]."

Despite the ease of management and the reliability, the idea of running Java workloads on a mainframe is still likely to appeal only to those who already have mainframes, said Mike Gilpin, an analyst at Giga Information Group Inc. in Cambridge, Mass. Most users would probably try to use Java for integrating their mainframe applications with those running on other servers, rather than running Java workloads directly, he said.

App Helps Boeing Link Factory Floor to Suppliers

Product uses a virtual feedback loop to notify suppliers in advance of needed parts

BY JAMES COPE

LAST WEEK, The Boeing Co.'s shop floor got a bit smarter with the rollout of iCollaboration, an intelligent software product that predicts when critical parts will be needed in manufacturing and notifies suppliers to deliver them.

Managing quality, cost and complexity are root challenges in manufacturing. And while manufacturing resource planning (MRP) software has helped companies streamline product development and shop floor processes, it hasn't helped much with predicting plant disruptions because of supplier problems.

Kurt Nuser, a manager of manufacturing and industrial engineering at Boeing's military aircraft and missile plant in St. Louis, said iCollboration uses sophisticated mathematical modeling to create a virtual feedback loop between suppliers and Boeing's factory, where workers build F/A-18 aircraft and guided missiles.

The software, developed by Adexa Inc. in San Diego, links directly to Boeing's MRP applications from Western Data Systems Co. in Calabasas, Calif., and will be used for scheduling inventory with Boeing suppliers, Nuser said.

THE BOEING CO., SEATTLE

BOEING is rolling out software that can spot potential scheduling and supplier glitches in F/A-18 aircraft manufacturing projects.

"When our mechanics on the shop floor complete a job and log it into the system, the supplier will be able to see what job is next," Nuser said. And that will enable suppliers to schedule their manufacturing in advance of Boeing's next build sequence, he explained.

Typically, Boeing operates in a 15-day job cycle and has all the parts needed for that cycle on "Day 1" of the sequence, Nuser said. When fully implemented next year, the software will automatically signal suppliers across the Internet or Boeing's extranet in advance of a given manufacturing cycle, detailing what parts are needed and when.

"The endgame is to get products pulled from suppliers instead of pushed," Nuser said.

He wouldn't comment on the cost of Boeing's iCollboration rollout, but Cyrus Hadavi, president and CEO of Adexa, said deployments can cost from a few hundred thousand dollars to $5 million.

Microsoft Appears Set to Make a .Net Linux Overture

BY LEE COPELAND GLADWIN

Microsoft Corp. appears set to announce a Linux dimension to its .Net initiative this week, but analysts voiced skepticism about how strongly the software giant would support an open-source operating system that competes with its own.

"Do we have a way for people who host Web sites on Linux to build on [.Net]? Yes, we do," said Microsoft CEO Steve Ballmer at a dinner hosted by The Churchill Club in Campbell, Calif., last week. "That's not to say our overall strategy is not to get those Web sites over to Windows, but we will provide a way for those Linux servers to use .Net."

Launched last summer, .Net is a massive technology overhaul that Microsoft claims will make it easier for applications to share functionality over the Internet and to support a variety of computers and devices in the form of Web services.

Whether the traditionally anti-Microsoft Linux user community would use Microsoft software is another question.

"Just because Microsoft creates modules for Linux, it doesn't mean that the open-source community will use them," said Dan Kusnetzky, an analyst at IDC in Framingham, Mass. But, he added, support for Unix and Linux is crucial, as those are the dominant operating systems for Web sites.

"If Microsoft wants to make sure anyone on the Web could be enticed to use their Web services, then they have to make it compatible with what's out there," he said.

Microsoft's Linux support would likely be developed in part through its collaboration with Corel Corp., the Ottawa-based maker of the WordPerfect desktop productivity suite and a Linux operating system. Microsoft invested $135 million in Corel in October, and company officials said the deal called for cooperation by Corel on the .Net framework.

"It remains difficult to assess the effect of .Net on a non-Microsoft platform," said John Enck, an analyst at Gartner Group Inc. in Stamford, Conn. "Linux is the operating system that keeps them up most at night. For North America, the play for Linux is small, but globally, it's much more critical."

"Microsoft has a vested interest in propping up the Windows 2000 server market," so it's hard to imagine that the company would truly support Linux, said Stacey Quandt, an analyst at Giga Information Group Inc. in Cambridge, Mass.

James Niccolai of the IDG News Service contributed to this story.

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BRIEFS

Compaq to Cut 5,000

Compaq Computer Corp. last week lowered its revenue and earnings outlook for the second consecutive quarter and disclosed plans to cut 5,000 jobs in its PC, supply-chain and marketing operations. The cutbacks will reduce Compaq's workforce by 7% and will be accompanied by a merging of its corporate and consumer PC units. That move is aimed at lowering internal costs, simplifying product lines and better positioning Compaq for combined home/office computing applications, the company said.

Gartner Scales Back B2B Projections

Gartner Group Inc. last week dramatically scaled back its estimates for the growth of business-to-business Internet commerce. Gartner last year predicted that 2004 "would be the year for massive adoption of Internet commerce," said Lauren Shu, director of e-business research at the Stamford, Conn.-based firm. Gartner has now lowered its 2004 worldwide estimate from $7.3 trillion in business-to-business Internet transactions to $6 trillion. Shu added that an economic downturn of significant depth could further lower estimates.

Eazel Lays Off 40

After releasing the first version of its Nautilus open-source desktop software with much fanfare on March 12, Eazel Inc. bit the bullet just a day later and laid off more than half of its 70-member staff. Greg Wood, a spokesman for the Palo Alto, Calif.-based software vendor, said it laid off 40 workers because it has been unsuccessful in securing a second round of funding in a tight technology market.

Short Takes

Online brokerages CHARLES SCHWAB & CO. in San Francisco and CSFBDIRECT INC., the online trading unit of New York-based CREDIT SUISSE FIRST BOSTON, both said they will cut staff to reduce costs. . . . VERIZON WIRELESS in New York said it will cut approximately 800 employees to streamline operations.

Lawsuit Questions Oracle Savings Claims

Says company saved $1B by cutting 2,000 workers, not by using 11i, as Ellison said

BY MARC L. SONGINI

THE JURY APPEARS to be out on Oracle Corp.'s claim that it saved $1 billion by standardizing on its own applications.

While some industry observers and competitors expressed doubts about just how much money Oracle's E-Business Suite 11i saved Oracle, a new lawsuit goes beyond mere skepticism to allege fraud.

Milberg Weiss Bershad Hynes & Lerach LLP, a New York-based law firm, earlier this month launched a class-action suit on behalf of Oracle investors. The suit attacks, among other things, Oracle CEO Larry Ellison's much-repeated claim that from 1999 to 2000, Suite 11i saved the company $1 billion, primarily through software automation and centralization. In recent months, Oracle has been using its Suite 11i testimonial to create interest from potential customers.

According to a statement by Milberg Weiss, one of the law firm's partners, Ellison violated securities laws by misrepresenting Oracle's real earnings potential and then made a huge profit by selling off his stock at an artificially inflated price.

The suit alleges that despite Oracle's claims to the contrary, Suite 11i was "fraught with massive technical problems." requiring expensive integration work.

Moreover, Weiss alleged, "Oracle's so-called billion-dollar savings was not the result of the synergies created by Oracle's 11i product but rather [Ellison's] decision to terminate more than 2,000 employees." He claimed that the firings saved the company at least $400 million.

"We've not received or reviewed the complaint, but the allegations are without merit and will be defended against vigorously," an Oracle spokesperson said last week. "There were never a large number of layoffs." While implementing Suite 11i, the company trimmed approximately 1,000 jobs, mostly through "natural attrition," the spokesperson said.

According to the spokesperson, Oracle never claimed "that every cent of the $1 billion came from implementing the software." Rather, the company saved money also by traditional cost-cutting methods supported by Suite 11i. For instance, Oracle moved much of its support operations online, freeing up personnel for redeployment elsewhere.

Some industry analysts said they agree.

From a bureaucratic point of view, Oracle was "grossly inefficient" for a long time and lacked centralization, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. Oracle saved money by consolidating IT operations on one set of Suite 11i applications instead of relying on disparate software suites.

Weiss' claim that Oracle saved $400 million by firing only 2,000 people sounds too high to be credible, Greenbaum said. ◗

Continued from page 1

Oracle

grew 16% to $583 million, or 10 cents per share — 2 cents per share below analysts' original expectations. Revenue for the quarter came in at $2.7 billion, compared with $2.4 billion for the same quarter last year. The software developer reported a database license growth rate of 6% for the quarter, slightly better than earlier forecasts that pegged the growth rate at only 1%.

Casting Blame

In a statement earlier in the month warning of the slip, CEO Larry Ellison blamed the last-minute downturn on the reluctance of chief executives at user companies to loosen their purse strings and finalize deals that Oracle was counting on during the final days of the third quarter.

"A substantial number of our customers decided to delay their IT spending based on the economic slowdown in the United States," Ellison said. "The problem is the U.S. economy." Oracle chief financial officer Jeff Henley said the economic slowdown led to a negative 67% growth rate in the dot-com segment alone, hurting earnings overall.

But some users say the pricing used by the Redwood City, Calif., software developer is at least partly to blame. Last year, the company introduced a new pricing model for Oracle8i based on a measure it calls the "universal power unit" (UPU). The UPU is calculated by multiplying the number of processors by the processor speed. That number is then multiplied by the price per UPU, as determined by Oracle. The total price tag can run into the hundreds of thousands of dollars.

John Chadwick, a database manager for the British government, said the pricing problems have spread across the Atlantic. As dot-coms with different software from different vendors merge, they will inevitably be faced with deciding which is the most cost effective to maintain, said Chadwick. "Why replace a 250-MHz system with a 1,000-MHz system at the end of a lease if the Oracle license cost is going to not only exceed the server cost, but also the business benefit?"

In a recent study, Cambridge, Mass.-based Giga Information Group Inc. attributed the slowdown in Oracle database sales to an increasingly competitive market, customer confusion about the availability of the latest Oracle9i release and the company's "luxury scale" pricing.

> Sorry, Larry, it ain't gonna happen in your lifetime.
>
> GARY NORWELL, DATABASE DEVELOPER AT HYBRID TURKEYS, ON THE PROSPECTS OF A NEW ECONOMY BASED ON ORACLE PRODUCTS REPLACING THE OLD ECONOMY

"We believe many customers are at a minimum elongating their sales cycles, if not completely deciding against Oracle and moving to competitors solely based on cost," said Teri Palanca, an analyst at Giga. "This situation will continue unless Oracle either changes its pricing or begins . . . to offer steeper discounts."

Rich Niemiec, president of the Chicago-based International Oracle Users Group, said many users are waiting for both the economy to pick up and the release this spring of Oracle9i, which is expected to offer money-saving administration features.

Carl Olofson, an analyst at IDC in Framingham, Mass., said news of the slowdown, coming as it did during the last few weeks of the quarter, could be damaging to Oracle because the company has traditionally earned a large portion of its annual revenue at that time. Softness in the economy may be "somewhat to blame" for the downturn, said Olofson, but he declined to speculate on user dissatisfaction with pricing.

"Undoubtedly, many dot-coms based their business on Oracle products, and Ellison expected the trend to go on until the New Economy replaced the Old Economy," said Norwell. "Sorry, Larry, it ain't gonna happen in your lifetime." ◗

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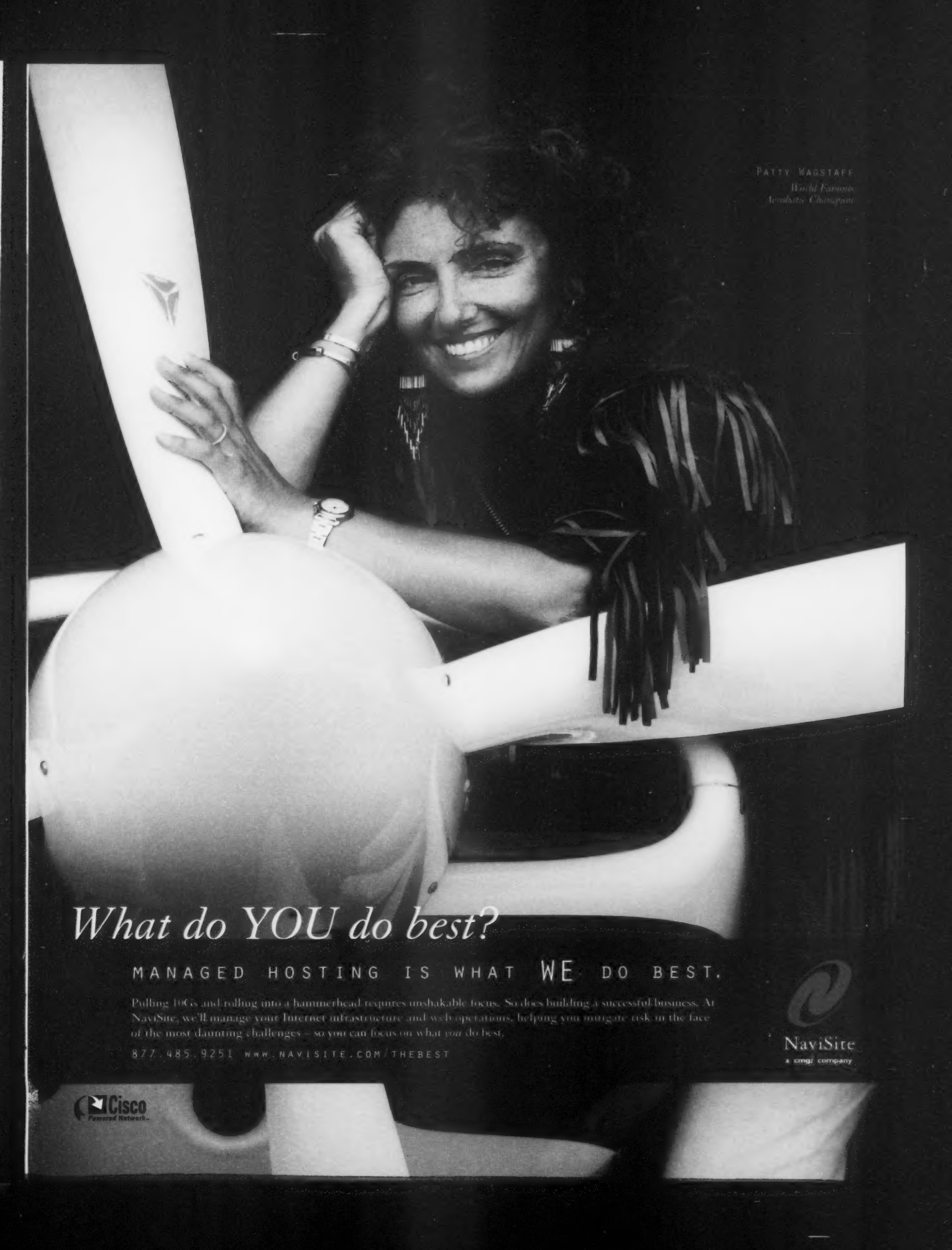
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From Fee to Free to Fee Again: Britannica.com Restructures

Online encyclopedia publisher ends free access to content and cuts staff by 31%

BY JENNIFER DISABATINO

BRITANNICA.COM INC. will no longer provide content from the Encyclopaedia Britannica for free and instead will begin a subscription service for the online content — again.

Like other content sites that didn't find enough gold in Internet advertising, Britannica.com is changing its business model. The restructuring, announced last week, will involve a 31% layoff of Britannica.com's workforce and heavy marketing of other pay services, such as BritannicaSchool.com.

"There was a time not along ago when most observers believed that Internet services had to be supported mainly through advertising," said Don Yannias, Britannica.com's CEO. "We are out there in the marketplace, however, and we're convinced that a diversified business model combining free and subscription-supported products is the road to success." Britannica.com, a private company in Chicago, wouldn't disclose advertising or other revenue.

According to Britannica.com spokesman Tom Panelas, the subscription service will be rolled out within the next several months; however, the company hasn't yet formulated a pricing model.

The news comes less than 18 months after Britannica.com launched its free service on the Web. Before that, the Encyclopaedia Britannica was available through Britannica Online. That subscription service was the first to put the entire contents of an encyclopedia on the Web in 1994.

Britannica Online had two pricing models in place before Britannica.com went live in October 1999. For individuals, the cost was $5 per month, or $50 for a year's subscription. For institutions, like colleges, the cost was, on average, 50 cents per seat. The more seats an institution purchased, the lower the per-seat cost.

When Britannica.com debuted, a crushing surge of 10 million visitors forced the site to temporarily shut down. But that popularity apparently didn't translated into monetary success for the subsidiary of Luxembourg-based Encyclopaedia Britannica Holding SA.

Moving back to the subscription model makes sense, said analyst Harry Wolhandler at ActivMedia Research LLC in Peterborough, N.H.

"Early on, nobody knew what the revenue model was going to be, and as long as the investors were willing to fund any crazy idea that came along," the advertising model worked, Wolhandler said.

With investors skittish on tech investments in the past few months, "all of a sudden, decision-making is going to become more rational," he said.

Full Circle

The evolution of online content business at Britannica.com:

1994

The Encyclopaedia Britannica goes online, for a fee. It's the first encyclopedia to post its entire content on the Internet.

1999

Content becomes free to users.

2001

Subscription fees reinstated amid a general change in revenue models for Internet businesses.

Continued from page 1

Exchanges

ued to question their viability in the absence of data standards, to raise issues about the financial models and technology and to express concerns about jeopardizing close ties with trusted suppliers.

It's still early for both retail exchanges. So far, GNX equity partners have pushed less than 5% of their pledged $260 billion in purchase volume through their exchange, said Jeremy Hollows, CIO at Paris-based retailer Carrefour, SA, which helped start GNX. Hollows said he expects that could increase to 25% to 50% by next year.

The WWRE, too, is just scratching the surface. "We haven't covered 1% of what we're going to do eventually through the exchange," said Gerard van Breen, a senior vice president at Royal Ahold NV in the Netherlands. He added that the WWRE won't meet original expectations of breaking even this year, but he thinks it will be possible next year.

In a report issued on the eve of the conference, Lora Cecere, an analyst at Stamford, Conn.-based Gartner Group Inc., gave both the GNX and the WWRE a mere 0.2 probability of feasibility, based on the maturity of the underlying technologies in the time promised.

Cecere noted that the GNX and the WWRE are both interested in collaborative processes such as CPFR. "There are approximately 100 [CPFR] pilots," Cecere said. "And they're just pilots today because people are struggling with that on the one-to-one level. It isn't ready for marketplace activity."

Collaborative technology should mature by 2003, she said. But in the meantime, some retailers may get impatient.

"They will rationalize that they need a lot of money to develop the technology. Then they will start to look for resources and money," Cecere predicted. "With the current economic climate, money will become more difficult, which will then cause individual players to break off and do private extranets."

When Dale Anderson, an IS leader at Best Buy Co. in Eden Prairie, Minn., polled some 200 conference attendees about their membership in an exchange or serious intention to join one, no more than a half-dozen hands went up. Anderson cracked that his session must have been filled with consultants and vendors.

One hand in the air belonged to Max Peter, CIO at Bon Appetit Group AG in Moosseedorf, Switzerland. Peter said his company will probably join an exchange this year and is leaning toward the WWRE because he considers it "more cooperative" than the GNX, which has "power" vested in eight equity players who stand to profit from the venture.

But with either exchange, Peter has concerns about the lack of standards. "It's still Babel. That's one big problem in the retail industry. Everyone is talking his own language," he said.

Peter Rieder, infrastructure manager at Zurich-based Migros-Genossenschafts-Bund, the leading grocer in Switzerland, said he plans to recommend that his company explore joining an exchange, since he's hearing "this is the thing that will change our business in five years' time."

But Rieder also said he's worried about hurting relationships with existing suppliers. "We [have been] electronically committed to the suppliers for 20 years" through electronic data interchange and proprietary standards, he said.

Eric Renard, CIO at Paris-based Galeries Lafayette, a WWRE charter member, expressed disappointment at the exchange's progress, particularly in his company's key areas of interest, electronic catalog management, product development and collaborative buying and replenishment. Rene Eskl, a consultant to the French retailer, charged that WWRE isn't organized in Europe and that GNX has moved more quickly.

Royal Ahold vice president Ruud van der Pluijm acknowledged that standards have been a problem with catalogs, but he is "convinced that European retailers will drive that process forward," through the Global Commerce Initiative.

His colleague van Breen admitted that the WWRE, which launched with a mere "vision" last March, moved slowly through July. But he said he has since been amazed at the exchange's progress, noting that it scheduled 52 auctions in January compared to 39 the previous year, has CPFR pilots ready to launch and will go live with requests for proposals, information and quotes next month.

"It's not easy work. It's not a piece of cake," van Breen said. "But the more we do about it, the more excited we get about the potential for using it."

Group Dynamic

The giant retail exchanges formed a year ago.

GlobalNetXchange The eight equity partners are:	
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Kroger	J.C. Penney
Metro	Kmart
Sainsbury	Marks & Spencer
Sears	RadioShack
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Customer Support Moves Overseas

Firms turn to outsourcing as telecom costs drop

BY JULEKHA DASH

FACED WITH A SHORTAGE of talent and real estate in Silicon Valley, Mike Lambreth, customer service manager at Shutterfly Inc., recently outsourced some customer support functions.

But representatives who answer questions via e-mail about digital photography from Shutterfly customers aren't just a state away. They sit in a 65,000-square-foot facility in Bangalore, India, halfway around the world from the firm's headquarters in Redwood City, Calif.

The thought of overseas customer support may have seemed far-fetched just a short time ago because of logistical problems such as high telecommunications costs and language and cultural barriers. But Shutterfly is among a growing list of firms that are not only turning to third parties to manage customer support but are also relying on workers from foreign shores.

"Finding qualified people [for core business operations] is difficult enough in this area without having to run a huge e-mail operation," said Lambreth. He added that Shutterfly receives as many as 600 customer e-mails per day. Los Gatos, Calif.-based 24/7 Customer.com manages Shutterfly's service center in Bangalore.

Yet Shutterfly is far from unique. General Electric Co., American Express Co., British Airways PLC, FedEx Corp. and Citibank, a unit of Citigroup Inc., all have overseas customer support operations.

Driving Factors

Two of the driving factors behind the growing interest in offshore call centers are declining telecommunications costs and maturing Internet technologies. Bandwidth costs, for instance, are dropping at a rate of about 60% per year, said Jay Patel, an analyst at The Yankee Group in Boston.

In addition, he said, many clients are even beginning to outsource their call center operations and their Web-based support overseas.

FedEx has operated overseas call centers for more than a decade, and now the company is thinking about outsourcing some of those operations, according to Sheila Harrell, vice president of strategic analysis and planning at the Memphis-based package transport firm. Improvements in telecommunications and customer relationship management software have made outsourcing an option in this arena, she said.

And, although FedEx's 40 overseas call centers mostly handle queries from the U.S., Harrell said the company is planning to network its call centers so support staffers have the customer information they need to handle worldwide calls.

"Our goal is to [operate] 24/7 around the world" and offer customers traveling abroad consistency in how their data is handled, she said.

But setting up offshore call centers isn't without its challenges. Even if outsourcers select countries with well-educated, English-speaking populations, many find that they need to provide training to familiarize the foreign staff with American culture.

24/7 CUSTOMER.COM manages a customer care center for Shutterfly in Bangalore, India, even though both firms are based in California.

Another obstacle is the high price of calling overseas. To help combat the problem, 24/7 Customer.com uses voice over IP phone systems, which send voice over data networks, instead of relying on costly traditional phone lines.

According to the Telecom Applications Research Alliance in Halifax, Nova Scotia, voice over IP can yield a potential savings of as much as 35% vs. traditional Centrex service or private branch exchange systems.

A number of Fortune 500 companies, mostly in the financial services and telecommunications industries, have already outsourced some of their call center operations but are reluctant to disclose that information, according to analysts and vendors.

"A lot of companies don't want to let you know that some other business has their [customer] data," said Brian Bingham, a senior analyst at IDC in Framingham, Mass. The problem, Bingham explained, is that some clients believe that turning over business to a company that's "outside your domain" will cause firms to lose touch with their customers.

But Elizabeth Herrell, research director at Cambridge, Mass.-based Giga Information Group Inc., estimates that about one in five call centers are outsourced, either in the U.S. or overseas, and she expects that figure to double by 2005.

Monrovia, Calif.-based Etelecare International, another call center outsourcer, boasts on its Web site that it operates a 300-seat facility in Manila in an "economic development zone near major universities." But a spokesman for declined to be interviewed for this story and said the company's client list is confidential.

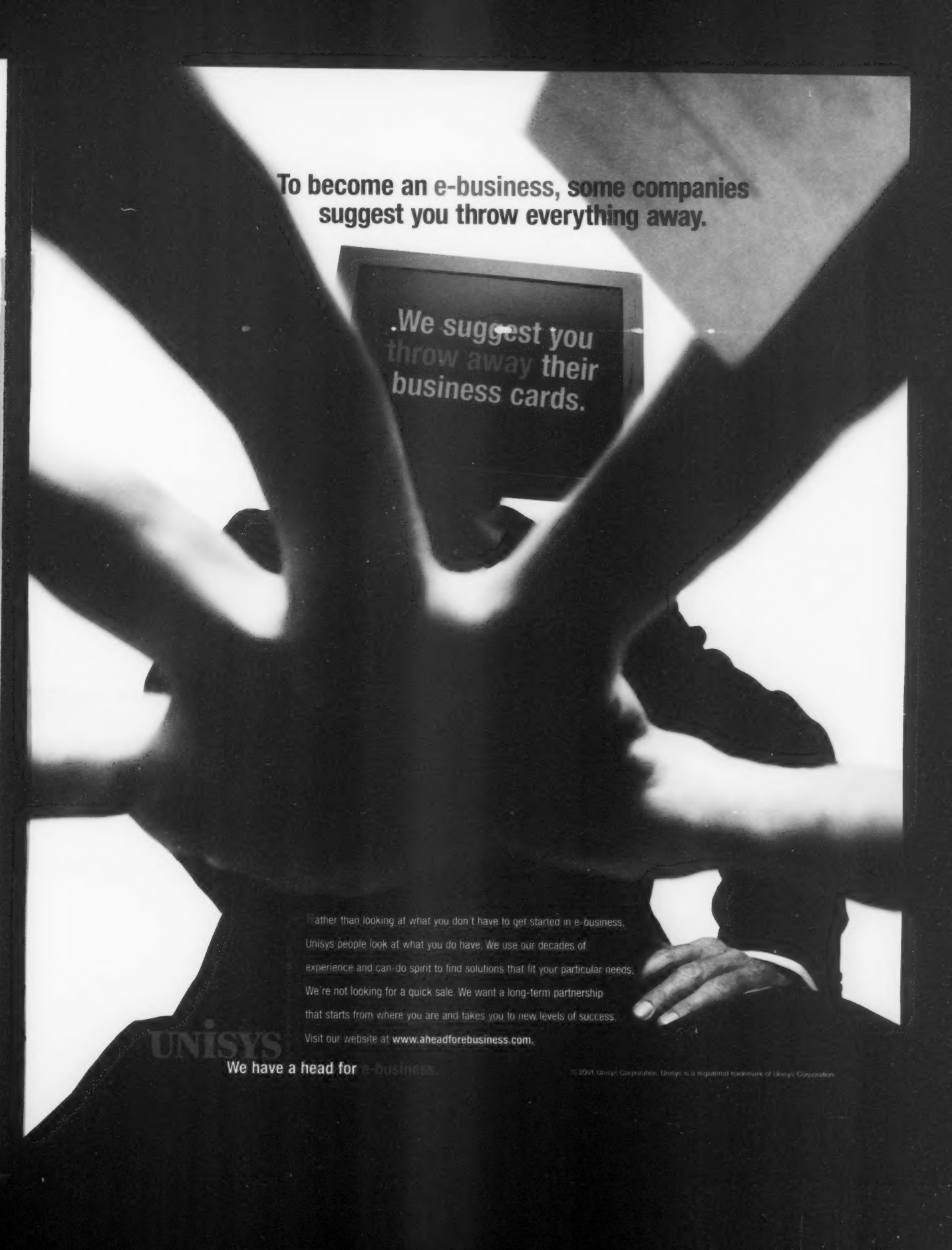
Jeff Ferro, customer care manager at AltaVista Co. in Palo Alto, Calif., said that when he decided to outsource some e-mail support to 24/7 Customer last summer, he thought it would "involve a lot of micromanaging." But, he said, he was pleasantly surprised. It required only one trip by a staff member to the overseas facility to make sure everything was in place.

The decision to use 24/7 Customer.com paid off, said Ferro, who added that by switching to an overseas outsourcer, AltaVista wound up slashing customer support costs by 25%.

Smooth Sailing

Overseas customer-support centers can save companies as much as 20% to 40%, according to vendors and users. The following are some tips for working with such outsourcers:

- Choose a vendor that **can add support staff** if your needs grow.
- Check out the **vendor's language support capabilities.** This may mean using different outsourcers for different languages.
- **Have the vendor on-site** at your facility to learn your business.
- For better customer service, make sure the **vendor's support staff feels like a part of your own company's team.**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Ultrawide Band Could Interfere With GPS

BY BOB BREWIN

A new report has bolstered the safety concerns raised by the airline, cell phone and television broadcasting industries about the use of ultrawide band (UWB) wireless technology, a technology that was hailed a year ago by the Federal Communications Commission for its ability to provide broadband services by piggybacking on bands of spectrum occupied by wireless services.

UWB devices spread signals across a broad swath of spectrum, raising the possibility of interference with other systems. On March 9, the National Telecommunications and Information Administration (NTIA) issued a report that airline and U.S. Department of Transportation officials said raises serious concerns about potential interference with the Global Positioning System (GPS) that the Federal Aviation Administration plans to use for all stages of controlled flight.

UWB devices are short-range transmitters used for applications such as wireless LANs. UWB has the potential to provide short-range, high-speed wireless data transmissions that could make untethered access to Web pages as fast as a wired connection.

Critical Systems at Risk

James Miller, a senior staff specialist for flight operations technology at Chicago-based United Air Lines Inc., said the NTIA report should serve as a strong warning against any plans to license UWB devices for use on the GPS 1.2- and 1.5-GHz bands, which are used for air traffic control. The report and the tests "show that there is interference with critical safety-of-life systems," Miller said. "It's not in the best interest of aviation to experiment with UWB in the GPS bands."

Jeff Ross, vice president for corporate development strategies at Huntsville, Ala.-based Time Domain Corp., which has championed UWB technology, said the company is still evaluating the report.

Robert Fontana, president of Multispectral Solutions Inc. in Germantown, Md., which also manufactures UWB systems but has decided to focus on frequencies well above the GPS band, described the NTIA report as "devastating for the use of UWB in the GPS bands. This is the kiss of death for any company that wants to operate in those bands."

The National Association of Broadcasters in Washington also opposes widespread use of UWB, saying the devices could cause interference with spectrum bands used by remote news crews as well as the C-band satellite dishes used for the distribution of programming and commercials. Ross dismissed those concerns, however. "When anyone advocates a new technology, people [with existing spectrum rights] are against it," he said. "It's the position you take if you are a spectrum manager."

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BRIEFS

Intel Expands ASP Support Services

Intel Online Services Inc., a division of chip giant Intel Corp., last week announced its ASP Accelerator Program to provide member application service providers (ASP) with business tools. ASPs joining the program will receive marketing assistance and introductions to potential customers and strategic partners. Those partners would include other ASPs, independent software vendors and Web integrators, Intel said.

IBM Backs Emerging Chip Technology

IBM last week said it will join other leading chip makers to develop a manufacturing technology viewed by many as critical for the continued advancement of microprocessors and other types of silicon chips. Called Extreme Ultra Violet (EUV) lithography, the technology is being supported by Intel, Motorola Inc., Advanced Micro Devices Inc. and others as part of an industry consortium founded in 1997 known as the EUV Consortium LLC.

Lucent May Sell Optical-Fiber Business

Lucent Technologies Inc. last week said it's considering either selling its Atlanta-based optical-fiber business or spinning it off by forming a joint venture with another company. This came on the heels of rumors that the financially strapped maker of networking and telecommunications equipment would sacrifice ownership of all or part of the optical-fiber manufacturing unit to shore up its cash position.

Short Takes

Internet investing firm CMGI INC. in Andover, Mass., said its loss for the three months ended Jan. 31 was $2.6 billion and that it may sell off more units to become profitable. . . . MOTOROLA INC. in Schaumburg, Ill., said it will cut 7,000 jobs in its personal communications division, citing continuing deterioration in the mobile handset market. The company has cut or outsourced about 16,000 jobs in the past six months.

Despite Tough Times, Novell Users Remain Upbeat

Novell acquires consulting company; Schmidt to vacate CEO position

BY MARC L. SONGINI

USERS attending Novell Inc.'s BrainShare 2001 conference, which kicks off today, are convening as the ailing networking technology vendor closes a major acquisition and reshuffles its management team.

Last week, the company announced its $266 million buyout of Cambridge Technology Partners Inc.

The Cambridge, Mass., IT services and consulting firm's CEO, Jack Messman, will replace Eric Schmidt as Novell's CEO when the deal closes. Schmidt will remain as chairman of Novell's board.

Although Novell laid off 16% of its workforce last September and reported operating losses of $13.3 million for its first fiscal quarter ended Jan. 31, many users said they remain upbeat.

The management reshuffle isn't an issue, said Kelli Carlson, a network administrator at juice manufacturer Odwalla Inc. in Half Moon Bay, Calif. Odwalla's servers run on Novell's NetWare 5.1 operating system, and Carlson uses other Novell products for LAN management, Internet access, security and caching services.

Carlson said she intends to get a preview of an upcoming version of the Web-enabled GroupWise e-mail and messaging software at BrainShare.

"A new release is on the horizon, and Novell has been waiting till BrainShare to give details on that," she said. Carlson also said she wants to be updated on Novell's Zenworks for Desktops management tool, which she said allows her to centrally distribute and maintain software on LAN clients with a relatively small IT staff.

Novell last week declined to comment on any announcements planned for BrainShare.

Curtis Parker, a LAN administrator for the state of Utah, also said he's unfazed by Novell's economic woes. The state has 500 NetWare servers in more than 100 offices running file-and-print and GroupWise applications and has no plans to change, he said.

Parker said that overall, he's pleased with Novell's directory and LAN management technology, but he wants to see NetWare features run natively on Unix server operating systems such as Solaris. "To dump Novell NetWare and go with a Microsoft network would be nuts," Parker said. "It would be like going from a brand-new Cadillac to a '69 Chevy."

"It may not be popular to stick up for Novell these days, but 'Big Red' is not dead yet, and we buy technology solutions, not marketing hype," said Chip DiComo, manager of global information services at Hellmann Worldwide Logistics, a transportation services company in Miami. "For Hellmann, Novell's technology is still very strategic," he said.

The company uses NetWare and Novell Directory Services (NDS) to maintain a "seamless global network," said DiComo, adding that NDS lets IT staffers manage user accounts and network resources from a single interface.

> To dump Novell NetWare and go with a Microsoft network would be nuts.
>
> CURTIS PARKER, LAN ADMINISTRATOR, STATE OF UTAH

Microsoft, eBay Strike Web Services Deal

Auction site to serve as showcase for .Net

BY LEE COPELAND GLADWIN

In a bid to give its Internet auction site a boost, eBay Inc. last week unveiled a deal to adopt Microsoft Corp.'s Web technology and .Net development tools.

Under the terms of the deal, San Jose-based eBay will use Microsoft's .Net tools and offer access to its commerce engine as an XML-based Web service. By deploying Microsoft's Web services, eBay plans to extend its reach to devices such as pagers, handheld computers and televisions, as well as to other novelty Web sites that hawk goods.

For example, a Web site for motorcycle enthusiasts could use Microsoft's Web services to tap into eBay's marketplace, instead of building its own commerce engine, said eBay CEO Meg Whitman.

The deal calls for Microsoft to carry eBay's auction listing on some of its Web sites, such as CarPoint, WebTV Networks Inc. and Microsoft bCentral, a small business site. EBay will also deploy Microsoft's Windows 2000 Server and the Passport online user authentication service.

"We will gain transaction-based revenue — listing fees and final value fees — as the eBay platform is extended to other parts of the Web," said Whitman. "In the distribution deal, we will gain new users who come to bid and ultimately become sellers."

WHITMAN: EBay can garner revenue from transactions.

Microsoft's .Net is a technology initiative that allows applications to swap functionality — in the form of Web services — with other applications on disparate platforms. Microsoft wants to showcase examples of the new technology at work as it delivers different parts of the initiative during the next year, said Microsoft CEO Steve Ballmer.

"We asked ourselves, 'What would be the one company that if it got behind .Net, it would be the most compelling because they're successful?' " said Ballmer. "And we said, 'eBay would be at the top of that list.' "

Gaining high-profile examples to showcase the .Net technologies is critically important for Microsoft, said Daryl Plummer, an analyst at Gartner Group Inc. in Stamford, Conn.

Microsoft has "to deliver the tools and get people using .Net, but not in an ad hoc fashion," said Plummer. "The other option is to sell to private companies, like eBay. Microsoft is taking a big step by getting a visible, successful Internet company and helping them to get to Microsoft-oriented Web services."

The relationship will build on eBay's application programming interface (API), which the company released last November to give developers a standard way to create applications that are integrated with its Web auction site.

The auction site uses Sun Microsystems Inc.'s servers for its back-end transaction processing. Those APIs will still be available and eBay will continue to use Sun's hardware, Whitman said.

Financial terms of the deal weren't disclosed.

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PATRICIA KEEFE

Reinvent Your Job

"DON'T IT ALWAYS SEEM to go that you don't know what you've got 'til it's gone?" Take job security. The news is saturated with stories about shocked and angry laid-off or outsourced workers. And reader reaction to our behind-the-scenes look at what it's really like to be outsourced [Cover Story, March 5] has been equally emotional.

PATRICIA KEEFE is *Computerworld*'s editorial director. Contact her at **patricia_keefe@computerworld.com.**

The common thread emerging from all this angst seems to be palpable outrage over the lack of loyalty and appreciation exhibited by the companies that dumped these workers. I see great irony here. Many of the outraged are the same people who scoffed at the old concepts of worker/employer loyalty and the very idea of long-term relationships. Why, only the unimaginative, the deadwood, stayed anywhere longer than a year. In high tech, this new breed of workers stalled projects and drove up salaries, along with IT budgets, as they madly job-hopped during a prolonged labor crunch. These people rewrote workplace rules. Whole forests were laid to waste as the media raved about the brave, flexible new world of the modern workforce.

And then, *pow!* Reality set in on several fronts. Dot-coms really did have to make money and pay back loans. The economy is sulking. Tech stocks began tanking, dragging the stock market down with them. The go-go decade is over, and hard-hit New Wave workers are complaining.

But we can't have it both ways. We can't reject the notion of commitment and loyalty to a company, rearrange and restructure jobs to suit our needs and then act hurt when those same companies respond in kind. And companies can't routinely decide that the solution to all problems lies in flushing human resources down the drain and then whine because they can't find or keep quality workers.

There is an intriguing alternative approach pitched by Bruce Tulgan, founder of RainmakerThinking Inc., a management consulting firm. He says workers and companies need to redefine lifelong relationships. In his view, your employment should get broken up into stints of full time, part time, shared jobs and even sabbaticals. It also means redefining the concept of salaries and bonuses.

Maybe the best way to blunt the pain of the inevitable corporate belt tightening is for workers and managers to share the responsibility of creating new salary, bonus and working schedules that work for both parties. In this way, each side takes responsibility for its own success and, it is hoped, will reap the bounty of their joint effort. ◗

PIMM FOX

DNS Debate Casts Cloak Over Bigger Issue

THE DEBATE OVER new Internet domain names makes it difficult to concentrate on the serious technology issues facing Domain Name System (DNS) servers and the use of Berkeley Internet Name Domain (BIND), a free program developed in the 1980s to match domain names with unique numerical addresses.

Earlier this month, New.net, a Pasadena, Calif.-based start-up, announced that it would sell Internet domain names with extensions such as .store, .xxx and .chat [Page One, March 12].

These aren't top-level domain names in the same league as .com, .org and .net, names created by the Internet Corporation for Assigned Names and Numbers (ICANN). Acting independently of ICANN, New.net inked deals with some of the largest Internet service providers to reconfigure their DNS tables and give about 16 million customers direct access to these new domain extensions.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at **pimm_fox@computerworld.com.**

While this is a clever attempt to work around ICANN's slow release of more top-level domains, the DNS reconfigurations have heightened concerns over the weaknesses of BIND and potential confusion of the public domain name space.

With both publicly and privately created domain names, as well as multiple DNS registries, it's possible that two users could type the same Internet address but be sent to two different sites. And this potential confusion pales in comparison with the real security issues associated with BIND.

Written in the early 1980s as part of a graduate program at the University of California, Berkeley, BIND is a memory resident application used in about 90% of the Internet's DNS servers.

"It is a flat database and doesn't carry a lot of information; that's why your query times out," says Ben Petro, chief marketing officer at UltraDNS Corp., a start-up working with New.net customers to offer a competing managed DNS service using an application service provider model.

In January, the CERT Coordination Center, a government-funded Internet watchdog group, described "potentially devastating compromises" to the Web unless upgrades to BIND were made.

But making the IT fixes to BIND could be slow and won't erase its core vulnerability.

"Many of the problems with BIND have to do with coding problems and that just won't go away," says Ian Poynter, president of Jerboa Inc., an Inter-

net security consultancy in Cambridge, Mass.

Scott Beale, founder of Laughing Squid LLC, a San Francisco-based Web host, says, "You find out about these bugs, but people can still try to exploit them faster than you can deploy a fix."

What Internet users need is for ICANN, CERT and the Internet Software Consortium (the industry-backed nonprofit in charge of BIND) to resolve some of these problems before Web addresses lead to dead ends, e-mails go awry and hackers start messing with the guts of the Net. ◗

JOHN GANTZ

Despite Spending Slowdown, It's Full E-Speed Ahead

YOU MAY THINK that because of the current talk of capital spending slowdowns and the Internet stock crash, you may get some sort of breather in rolling out major e-business applications.

Not so. IDC is undertaking an e-business adoption study in 27 countries, and preliminary results indicate that companies are implementing e-business with a vengeance.

There are also signs that IT departments won't be able to handle the workload.

Think of it this way: This year, companies around the world will spend more on IT to support e-business than they did in five years of preparing for Y2k. That's more than $300 billion.

The gap between e-business expectations and IT reality seem to be the most pronounced in the following areas:

Web site integration. You can't have e-business with Web sites that don't talk with the rest of the business. Yet fewer than one in five companies have any significant integration with back-end systems like order processing, customer support or ERP.

JOHN GANTZ is a senior vice president at IDC in Framingham, Mass. Contact him at jgantz@idc.com.

Mobile support. Although more than 50% of Internet users will be mobile by 2003, less than 10% of Web sites have made any accommodation for mobile devices or users.

Localization. The Web's multinational character seems to be eluding most companies. While about one in four have content tailored for specific countries, less than 10% can handle any kind of local currency. Localization of Web sites is considered one of the most difficult aspects of running an e-commerce site, behind finding and retaining IT talent, and internal resistance to change.

Meanwhile, companies expect their online sales revenues to double this year and to represent double-digit percentages of total revenues in the U.S. Almost 60% of U.S. companies — and virtually all companies with more than 1,000 employees — have Web sites today. By the end of the year, half of all companies with Web sites will have e-commerce sites.

The good news is that business managers and IT professionals, at least according to the IDC study, have similar priorities for their Web sites: security, privacy and performance. They also agree that business unit managers are calling the shots when it comes to developing e-business initiatives, while IT is calling the shots on specifying technical solutions.

The bad news is that neither business unit managers nor IT professionals seem able to see the forest for the trees. Responses can vary so widely, even among similar companies in the same industry, that there seems to be no master blueprint behind the general migration to e-business. Early adopters in one area can be market laggards in another. This is a messy revolution.

Here's my short list of worries for IT managers:

Talent. It's on everyone's list as the No. 1 factor governing the speed with which companies can deploy e-business applications.

Outsourcing. This is the shortcut to the talent. More than 50% of companies host their Web sites internally; almost 25% outsource everything, including design and integration.

Mobile users. Within 18 months, there will be more mobile devices than PCs accessing the Internet. So there's not much time to prepare.

Last, you'll need some way to deal with prioritization. As business unit demands escalate for more mission-critical, must-have e-business applications, IT departments will need some way to garner enterprise support on their project priorities. IT will need its own marketing department just to keep from getting blindsided, bashed and badmouthed by business units that suddenly find themselves behind competitors because they thought e-business went away with the dot-coms. ◗

READERS' LETTERS

Power Struggle

WHAT IS the source of energy for the power generation discussed in "New Approach to Data Centers Could Stem Power Crisis" [*Computerworld.com*, March 5]? Is it natural gas? If so, that also seems to be in short supply, and the cost of that source of energy has risen here by a factor of two to three times over the cost last year. Isn't this scheme just borrowing trouble?

Byron D. Miller
Vice president, ERP
Giga Information Group Inc.
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bmiller@gigaweb.com

Look at Local Culture

MANY U.S. companies blithely go into a foreign country assuming that the locals will immediately embrace the corporate culture over their own, which has been built up over far longer periods ["Companies Face Supply-Chain Challenges in Latin America," *Computerworld.com*, March 2]. I believe that to be the root cause of most of the problems companies have when expanding into foreign markets. The technological issues are just an outgrowth of the cultural underpinnings.

Burt Tschache
Database programmer/analyst
Puget Plastics Corp.
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btschach@pugetplastics.com

Another Valley Vagary

JUST AS ludicrous as the places mentioned in "Silicon Silliness Revisited" [Business, Feb. 19], the Mohawk/Hudson Valley in upstate New York calls itself Tech Valley. The fact that the name didn't make it onto your list even though it has been on the lips of local politicians and in the pages of local newspapers is a sure indication that it is mostly meaningless.

Robert M. Rabbin
Logic Technology Inc.
(Currently assigned to General Electric Power Systems, Schenectady, N.Y.)

Bugged by Viruses

FINALLY, somebody acknowledges that virus checkers can't protect systems ["Chinks Begin to Appear in the Antivirus Armor," Technology, March 5]. They can stop only what has already been seen. The latest virus hasn't been seen and can't be stopped, and you can't reduce the virus list size either because old viruses are still destructive.

The only way to reduce the virus threat is to not use utilities that run untrusted code. In my opinion, trusted code comes only from your local system, minus floppy; explicitly shared disk storage; local backup tape; and facility backup.

Jesse I. Pollard II
Senior Unix analyst
Logicon
Stennis, Miss.
pollard@navo.hpc.mil

VINCE TUESDAY should subscribe to a couple of the newsletters that announce new viruses as they appear in the wild.

Paul D. Lane
Information security consultant
Futron Corp.
Washington

HOW DO you improve the management of an antivirus program? Easy. Scrap your entire IT infrastructure. With the money you make selling it on eBay, pick up several thousand vintage electric typewriters and a couple of tons of carbon paper. Keep one standalone x386 in each department running Mavis Beacon's Touch-Typing Trainer, and you'll be armed and ready for the *new* New Economy.

Jason G. Willscroft
Chairman and founder
Fairygod Inc.
Seattle
jscroft@fairygod.com

P.S. *We're in the market for a few servers, so send me your inventory before you list on eBay, and I'll get you started.*

Good Will Hunting

IT SEEMS like Hewlett-Packard could garner a great deal of good will by open-sourcing OpenMail ["OpenMail Hits Wall: No More Upgrades," Page One, March 5]. It wouldn't even need to change the name.

Kent Schumacher
IS manager
St. Paul, Minn.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

DON TAPSCOTT

Linux Blazes New Trail of Collaboration

SMART MANAGERS in all industries look at the now-legendary Linux phenomenon and wonder: "How can we do that? How can we exploit the collaborative powers of the Internet and draw on the intellectual capital of our customers to improve our products?"

Linus Torvalds worked with online volunteers to develop a computer operating system — one of the world's most complicated products — that many users insist is superior to Microsoft's. Torvalds did this without benefit of a multibillion-dollar research-and-development budget, executive strategy committees, a human resources department, stock options and the rest.

DON TAPSCOTT is chairman of Itemus Inc. (*www.itemus.com*) and coauthor of *Digital Capital* (Harvard Business School Press, 2000). Contact him at [redacted]

Moreover, all this has been done while the Internet is still in its infancy. The Linux gang (an example of what I call a business web) relied on e-mail and file transfers. But the Net is going to soar in ubiquity, bandwidth and functionality. Far more sophisticated collaborative and knowledge management tools will soon be available.

It makes me wince when managers grumble that the Internet simply deluges them with customer e-mail, driving up customer service costs. Instead, they should embrace the customers' interest and capitalize on these energies to develop better products.

Lego Co. in Denmark understands this. In 1998, it began selling a toy called MindStorms. The $200 build-your-own-robot kit has 700 bricks, plus gears, motors and light and touch sensors.

The company developed software for the robot that runs on a proprietary microprocessor called an RCX (Robotic Command Explorer). Soon after the software was released, it was reverse-engineered by a Stanford University graduate student and posted on the Internet. Then a German university student developed a different operating system, which he also posted on the Net.

In the wake of these developments, amateur programmers began cranking out Lego applications that ranged from slot machines to photocopiers. Lego could have launched an attack on this breach of its intellectual property, but it didn't. Although it doesn't officially support the release of the code, the company benefits greatly from this volunteer business web. Each time a customer develops and posts a new application for MindStorms, the toy becomes more valuable.

Obviously, customer collaboration isn't new. Car enthusiasts have long helped one another tweak more horsepower out of their engines.

But with the Web, this collaboration is lifted to a global scale with virtually unlimited membership. And don't think it's limited to software. Consider GM's development of a business web to design cars using 3-D visual prototypes that it distributes via the Internet. Participants include style-conscious customers, fleet buyers, knowledgeable service technicians, supply-chain partners, dealers, car buffs and industrial designers.

These participants are motivated to freely share their advice because they love cars, enjoy interacting with the business web community and gain pleasure from influencing the design of a future car. When GM adopts an idea, it publicizes the news to the business web's members, enhancing the contributor's reputation. And it provides buyer rebates based on the quality and quantity of contributions.

Indeed, the Internet will soon make deep collaboration so easy that many companies should worry whether their customers could get together and produce the product on their own, making the company superfluous. With the arrival of the Net, it's eat or be eaten. ◗

WILLIAM M. ULRICH

Getting System Specs Right for The 'E' Era

MANY THINGS have changed in IT over the years. Computers are faster, software is better and we can exchange information with the click of a button.

WILLIAM M. ULRICH is a management consultant and president of Tactical Strategy Group Inc. Contact him via www.systemtransformation.com.

Yet one thing that hasn't changed — but should — is the way we address the challenge of ensuring that functional requirements are implemented into critical business systems in an acceptable time frame.

Take a telecommunications company that hired consultants to replace a billing system. Tens of millions of dollars and years of effort went into building a system that failed to replace the old system and created more work for users because they had to reconcile outputs between the old and new systems.

Delivering systems in a timely manner has always clashed with getting the requested functionality into those systems. IT tried to improve the functional aspect of this challenge by introducing "heavy" methodologies involving hundreds of extraneous steps and forms. But these methodologies prolonged development projects and were abandoned in the early 1990s along with requirements analysis. Development cycles remained too long, and meeting functional requirements remained elusive.

Today, IT organizations must deploy e-business systems in a fraction of the time spent deploying other types of systems in prior decades. But they need to meet these time constraints and still ensure that the functionality they implement is what the end users want.

Various solutions have tried to address these time constraints. For example, agile, or "light," methodologies reduce development cycle time by eliminating unnecessary steps found in heavy methodologies while retaining the rigor needed to guide developers through the process.

But agile methodologies don't address the specification issues that are driven by miscommunications between business users and development teams. For example, a user may think he's getting a new system, but he may only get a functional subset. The speed with which e-business systems must be designed and deployed continues to press companies into finding faster ways to get system functionality right the first time. Improved collaboration among participants can help here.

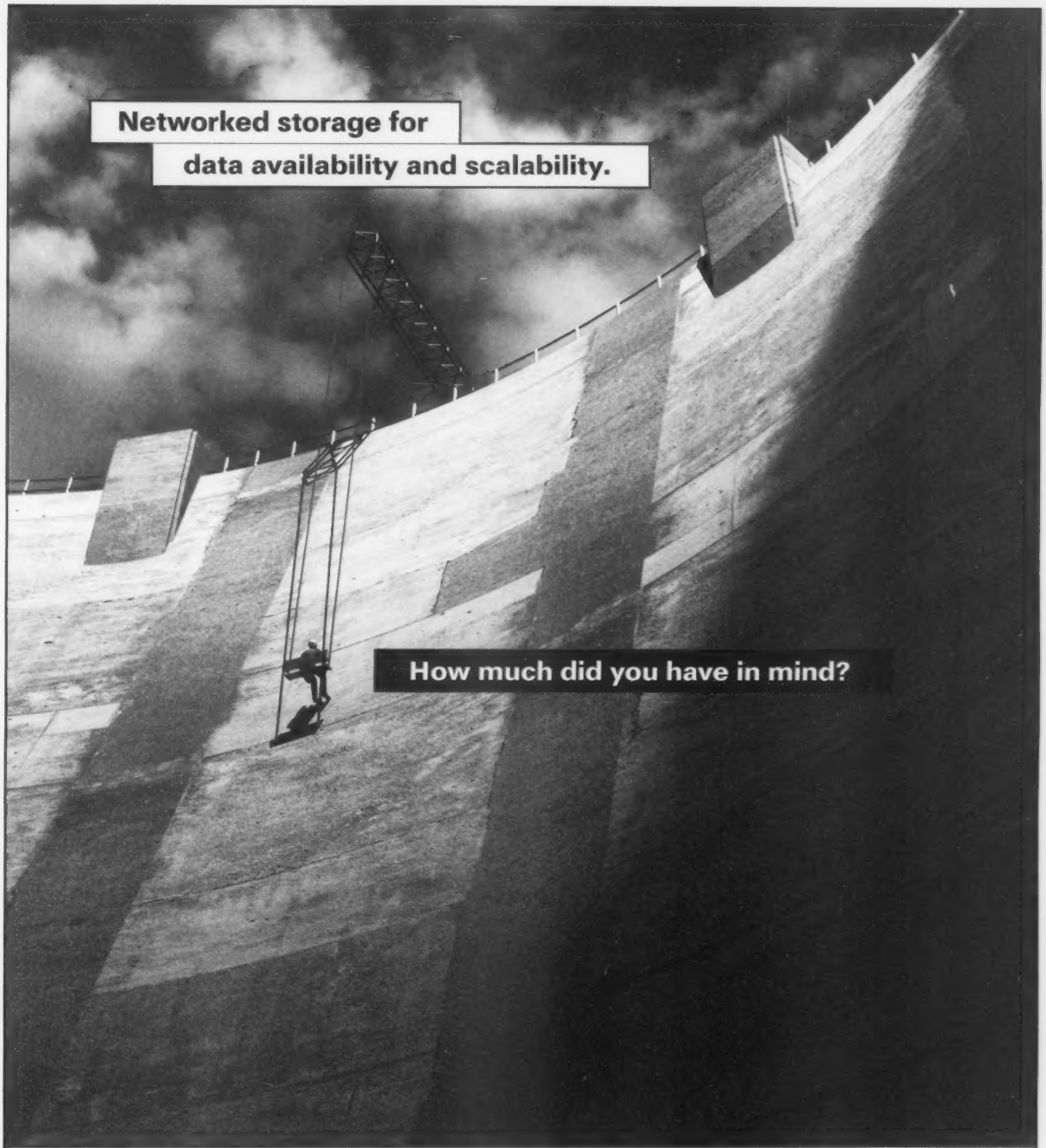
A collaborative development cycle requires that project team members — including end users, IT professionals, customers and business partners — create a shared purpose and principles, develop a common specification language and deploy communications tools to help them more freely exchange requirements and results.

Representatives from each group that's part of the project team should create a project purpose and set of principles to guide their actions. For example, a project purpose may involve creating an e-business system that allows customers to order products without having to interface with a human being. A principle may state that any participant can view any requirements, specifications, test cases, prototypes or other results at any stage of the project life cycle.

Agreeing on a common specification language is more important than the type of specification language being used. Any participant should be able to view system specifications and determine how they will impact the resulting system at any point in the project life cycle. This increases the likelihood of a user catching problems early in the development cycle and before the cost of fixing those problems soars.

Internet technology can facilitate the exchange of ideas, requirements, specifications, prototypes, test cases and related information. Online meeting and development tools allow participants to collaborate more frequently and freely than they would in face-to-face meetings. These tools should link all participants at every stage of the project.

Collaboration isn't a difficult concept, but it can be hard to implement based on historic barriers among IT, other business units and third parties such as application service providers or customers. But until this occurs, development cycles will remain too long and requirements too elusive to support growing e-business requirements, dooming a company in an economic downturn. ◗



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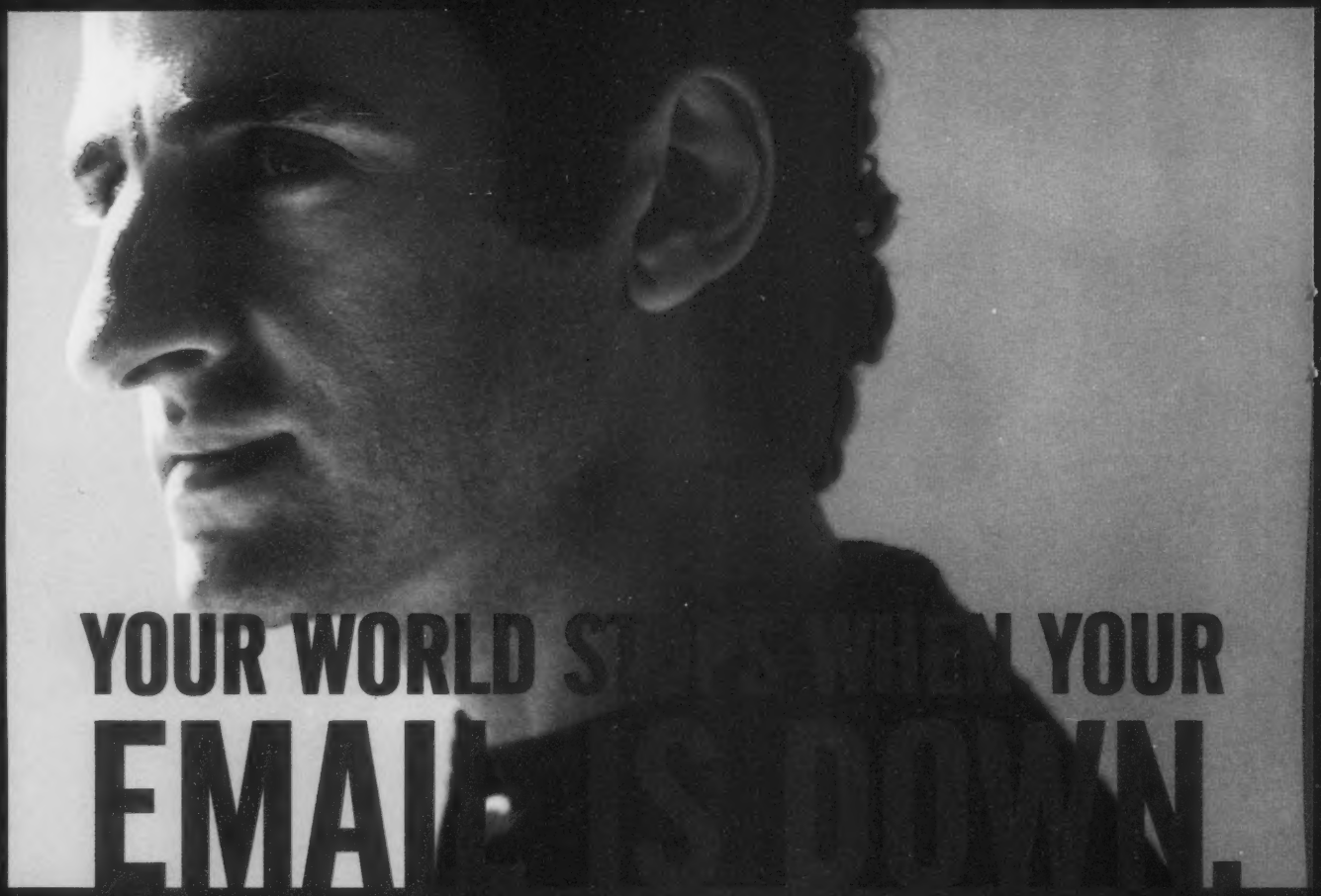

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BUSINESS

COUNTERATTACK

The arrest of FBI agent and accused spy Robert Philip Hanssen may have taken the nation by surprise, but such disgruntled insiders are far more common in organizations than most would like to believe. However, new software tools can help companies catch internal hackers before they cause damage. ▸ 33

BARGAIN DEGREE

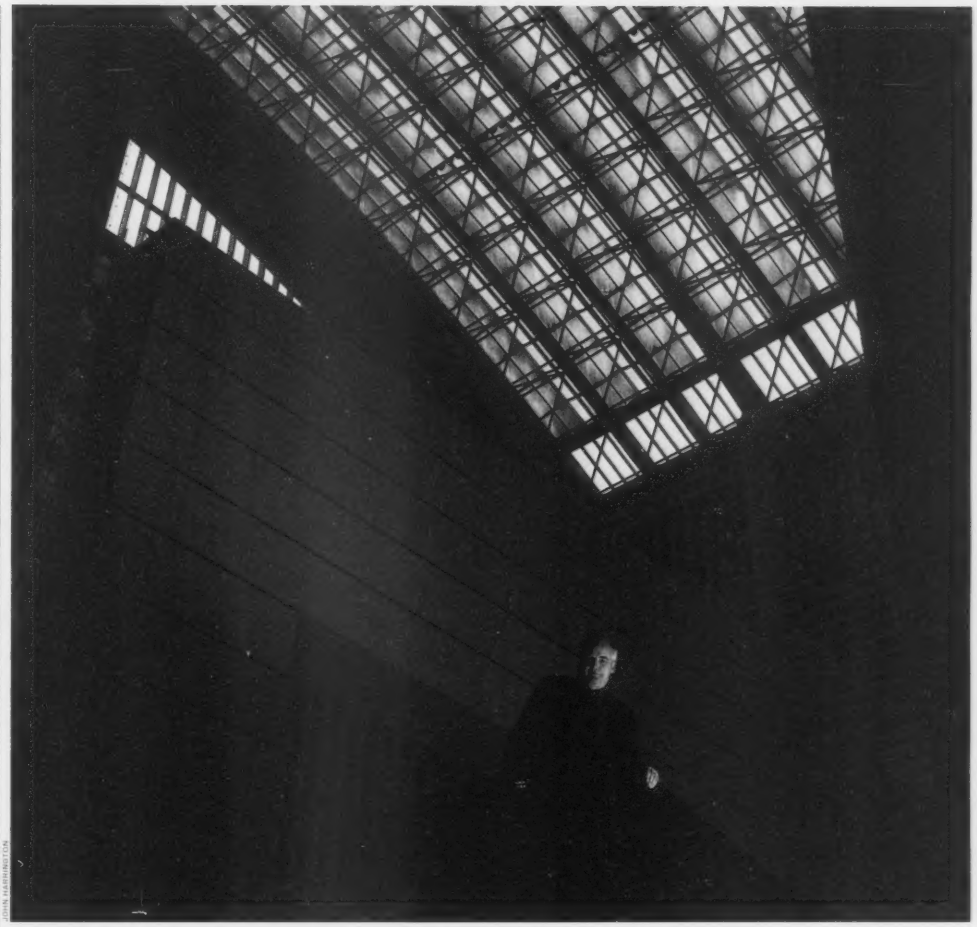
It's time to take another look at community colleges. Many students are avoiding the high costs of four-year universities while still gaining the skills they need to make it in IT. ▸ 40

REAL-WORLD CURRICULUM

As the need for business-savvy technologists continues to grow, colleges are teaming up with companies to plan curricula and coordinate internship programs. The result? "This is the best crop I have ever seen," says Home Depot CIO Ron Griffin of his recent recruits from the University of Alabama. ▸ 42

CORPORATE CHALLENGE

Kathleen Melymuka received surprisingly strong responses to her recent column about girls' lack of interest in IT. She reasoned that it's time for corporate America to show girls that there's more to IT than meets the eye. Her readers, however, have other ideas. ▸ 44



JOHN HARRINGTON

THE SAFETY NET OF OPEN-SOURCE ASPs

EXECUTIVES ARE USING OPEN-SOURCE application service providers (ASP) not only to save money, but also to gain an extra level of security in case their vendors go out of business. "If we own the code, it's less of a threat," says Gerhard Pohl (pictured), The World Bank Group's head of business development for the Development Gateway, an investment services resource portal for developing nations.

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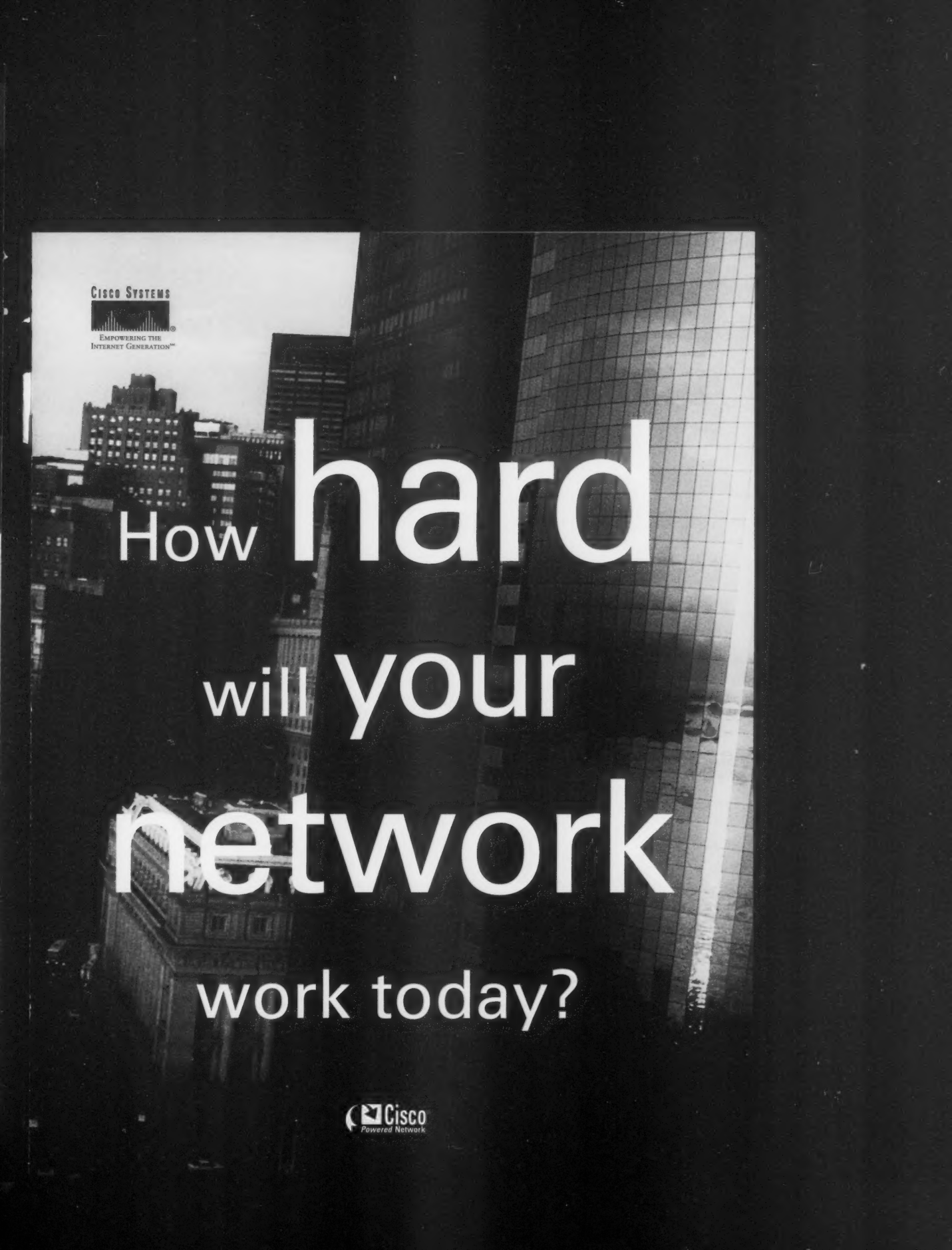
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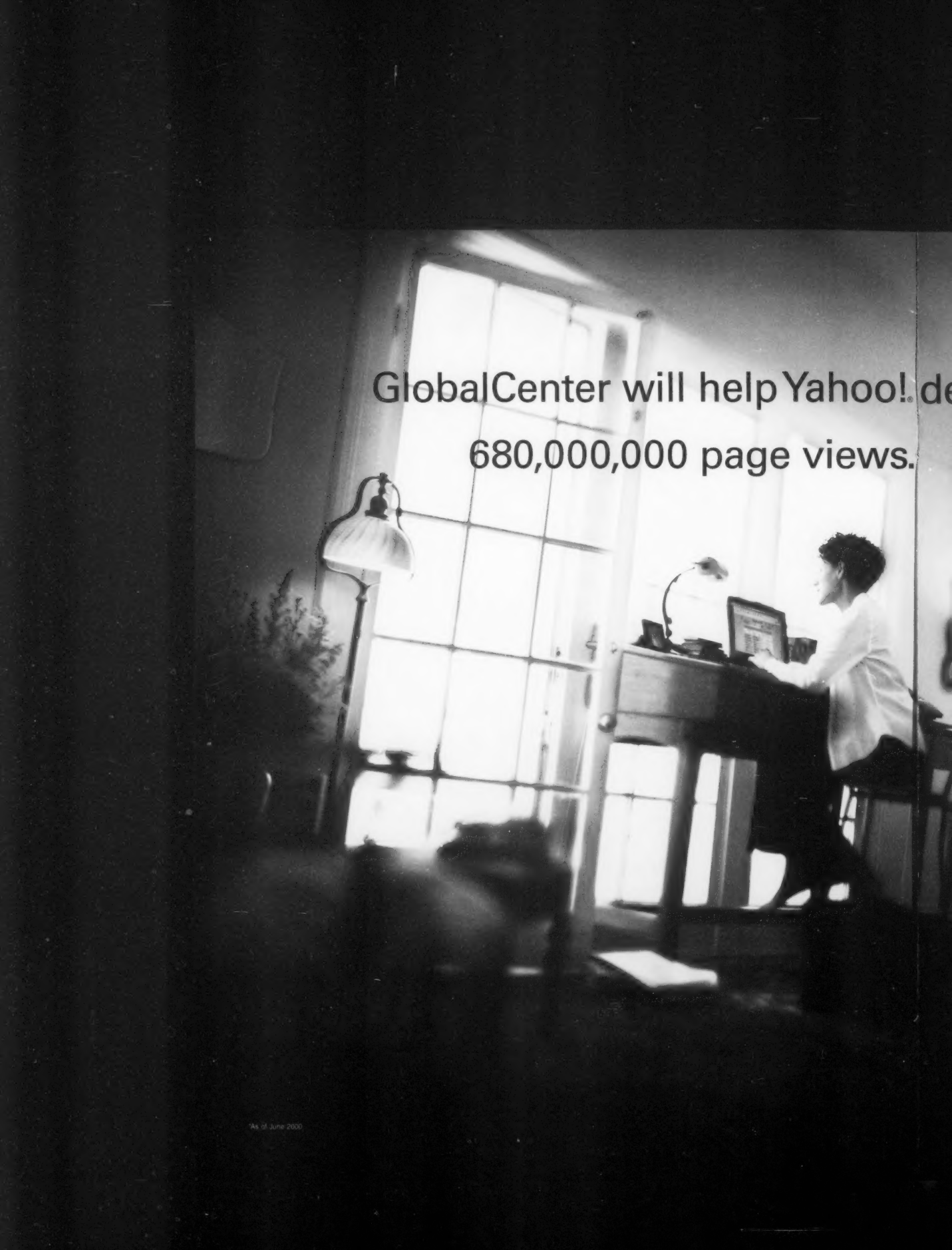

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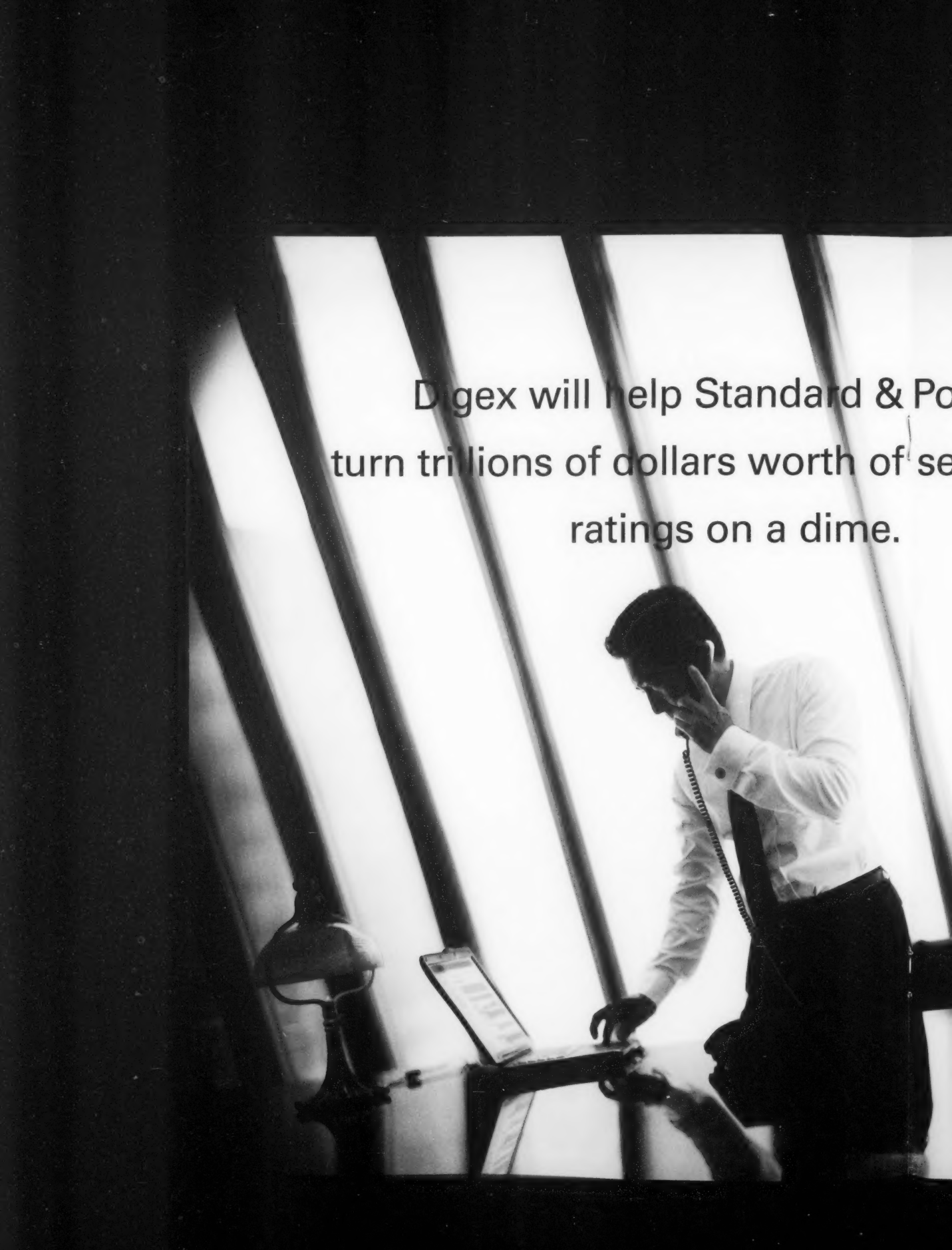
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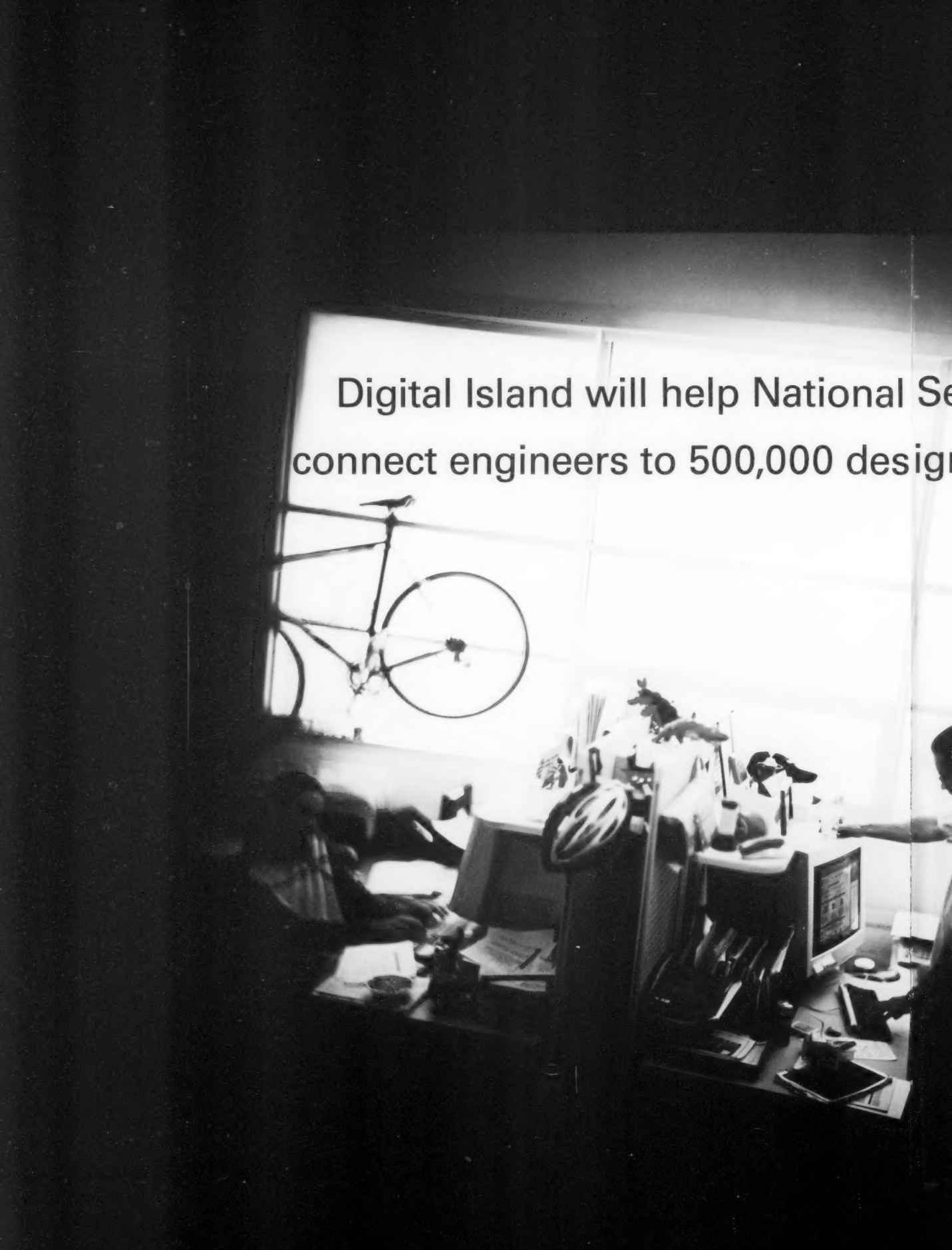
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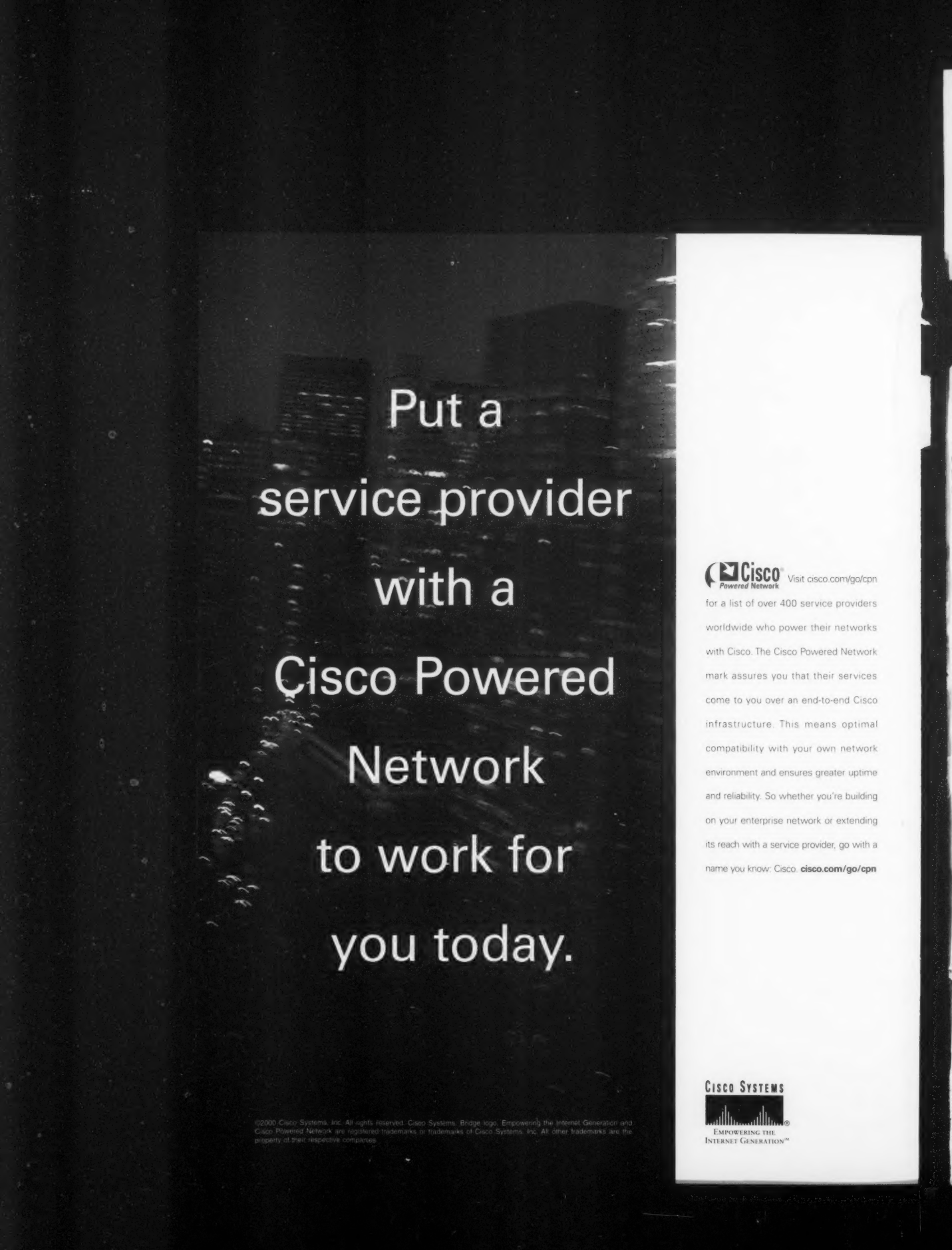

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Insider Monitoring Seen as Next Wave in IT Security

Companies say they must now automate network security and data protection

BY DAN VERTON

"RAMON" was an intellectual of sorts, highly educated, conservative in his politics, painfully introverted, somewhat arrogant and, according to some who knew him, kind of a geek.

He was an expert programmer who preferred communicating with associates through e-mail rather than in person. He even hacked into his employer's computer system without permission to show management that there were serious security gaps that needed to be fixed.

But somewhere along the line, Ramon's career faltered, and he became frustrated and contemptuous of his employer. And since his arrest on Feb. 18 for selling classified information, Ramon, also known as Robert Philip Hanssen, has been at the center of the worst insider spy case in FBI history.

However, the Hanssen case isn't unique to the government, say experts. The private sector is at risk from similar perpetrators. And there are characteristics shared by disgruntled insiders that, combined with circumstances like pending layoffs, can send those with trusted access to the dark side of IT.

A study conducted by psychologists at Political Psychology Associates Ltd. in Bethesda, Md., found that most cases of insider abuse can be traced to individuals who are introverted, incapable of dealing with stress or conflict, and frustrated with their jobs, among other factors (see box).

The behavioral research firm also pointed out, however, that many honest people share these traits. Experts, therefore, recommend tight controls on information access and monitoring tools that can catch insiders in the act.

"Often, there are feelings of betrayal and grudges," particularly during times of financial hardship at companies, said Eugene Schultz, an engineer at Lawrence Berkeley National Laboratory and an adjunct professor at the University of California, Berkeley. "There's no question that there is a link between insider activity and bad times at organizations."

For example, FBI agents at the New York field office had complained prior to Hanssen's arrival about the high cost of living, which led them to express concern about spying for financial gain. They may have been correct, as Hanssen is alleged to have asked his Russian handlers for diamonds to provide for his children's futures.

Schultz, who has written a study on the corporate use of "honey pots" — phony servers populated with false data designed to attract hackers — for Recourse Technologies Inc., a security software firm in Palo Alto, Calif., also said there's a clear link between job roles and insider activity. Surprisingly, systems administrators, network security personnel and senior executives are often the culprits.

Recourse Technologies CEO Frank Huerta recently conducted a live demonstration of his company's Mantrap honey pot software during a sales call at a major computer manufacturer. Within 30 seconds, a member of the company's network security team attempted to hack the honey pot server.

Caught in the 'Honey Pot'

In another case, a very large financial firm discovered it was losing money from its payroll systems. So it set up two dozen honey pots and gave each server an interesting name, such as "payroll server." The next morning, the company's chief operating officer was caught trying to jury-rig another executive's payroll account.

Eric Friedberg, formerly a computer and telecommunications crime coordinator at the U.S. Attorney's Office in New York, said companies should consider the new breed of software tools now emerging that could help detect unusual internal network activity. The new crop of tools includes Recourse's Manhunt suite and Lexington, Mass.-based Raytheon Co.'s SilentRunner network discovery tools.

Had the FBI used such a product, it could have discovered that Hanssen was searching for his own name in FBI databases, according to Friedberg. Hanssen's searches for his name "would have been totally out of the ordinary. There's no legitimate reason for that," Friedberg said.

Psych Profile Of Dangerous Insiders

Introverted: A common characteristic of IT specialists, which can pose a significant management challenge.

Frustrated: Family or social problems may be compounded by negative attitudes toward authority.

Computer-dependent: Such individuals often prefer online activity to direct social interaction.

Ethical flexibility: Dangerous insiders view malicious actions as justified, given their circumstances.

Entitlement: Feelings of being "special" employees – for example, the only ones with the necessary training. Being overworked with no rewards can lead to a desire for revenge.

Reduced loyalty: Some insiders identify with the IT/programming profession and not with the organization that employs them.

Lack of empathy: The impersonal nature of cyberspace leads to a lack of regard for the impact of the perpetrators' actions on others.

SOURCE: ERIC D. SHAW AND JERROLD M. POST, POLITICAL PSYCHOLOGY ASSOCIATES LTD.

Proposal to Divide INS in Two Could Ease Visa Headaches

Split designed to speed processing

BY JULEKHA DASH

Employers may be able to hire foreign workers faster if the Bush administration carries out its plan to split the U.S. Immigration and Naturalization Service (INS) into two divisions.

In his budget for fiscal 2002, which begins Oct. 1, President Bush outlined a $500 million, five-year plan to split the INS into two units: One would manage the border patrol, and the other would process visas and green cards for legal immigrants.

Trade associations, foreign-born technology workers and attorneys said dividing the organization should improve service for the millions of legal immigrants and the employers that sponsor them. However, some said they believe that splitting the INS could result in some administrative nightmares as officials try to separate millions of files.

Currently, the agency's resources "go largely to the enforcement side, [and] services are left to be the poor stepchild," said Jeff Lande, a vice president at the Information Technology Association of America, an Arlington, Va.-based trade association that represents the technology industry. Seventy percent of the INS's $4.8 billion budget goes toward enforcement.

Welcome Wagon

President Bush's immigration plans:

- **Allocate $500 million** over five years
- **Split the agency into two divisions:** one for border patrol and one for visa processing
- **Goal would be** to improve service, including visa processing times

Current visa processing times:

- **H-1B visa:** 60 to 110 days
- **Green cards:** two and a half to three years

Employers that hire foreign technology workers rely on a number of temporary visas. The INS allots 140,000 green cards each year, and in October, Congress nearly doubled the number of H-1B visas to 195,000.

Enforcement Bias

Immigration lawyers said many INS workers who process visas started at the agency as border patrol officials.

"If the officer's job is to decide whether someone gets a green card or an H-1B, in an agency where enforcement dominates, it colors your perception," said Carl Shusterman, a Los Angeles-based immigration attorney.

The enforcement bias at the INS has often led to unnecessary scrutiny of legal immigrants, which may help account for the long processing times for visas and green cards. Liz Stern, an immigration attorney at Shaw Pittman in Washington, said the "fraud mentality" of INS officials means the agency is often trying to second-guess independent, reputable credentials agencies.

Though October's H-1B legislation included provisions to speed up visa processing, attorneys and H-1B holders report that backlogs still remain.

Shailesh Gala, a senior software engineer at consulting firm CDI Corp. in Philadelphia, has been waiting almost six years for his green card. Splitting the INS into two divisions, he said, "would help tremendously, because there is no clear separation of duties" there now.

ERIC J. SINROD

By Any Other Name

THE FBI HAS ANNOUNCED that it will rename Carnivore, its controversial e-mail monitoring program, and instead use the name DCS1000. Yet even if the program were called Bambi, serious privacy concerns wouldn't go away. Indeed, the program may be as ominous as its original name.

Carnivore was designed by the FBI to monitor e-mail communications of suspected criminals. The program uses packet filters or sniffers that seek out parcels of data that are part of e-mail messages.

Notwithstanding the praiseworthy goal of enhancing law enforcement, it appears that Carnivore can intercept and scrutinize e-mail transmissions among people who have no part in criminal activities. Such a Big Brother-like possibility hasn't been welcomed by privacy advocates. The FBI has downplayed the legitimacy of these privacy concerns, stating that the program has seldom been used.

The FBI found itself in the middle of a firestorm last year when its failure to provide sufficient details about the program resulted in a lawsuit filed by the Electronic Privacy Information Center (EPIC). Through this litigation, EPIC has been seeking further details concerning the program under the Freedom of Information Act (FOIA).

Thus, it's plain that despite assurances that the program won't lead to wholesale privacy violations, the FBI hasn't been very willing to tell the whole story. Indeed, even in the context of the FOIA lawsuit, EPIC complained that the FBI continued to withhold vital information about the functionality of the program.

To help ease worries of privacy advocates, the Justice Department arranged for an outside review team to conduct analysis and make recommendations regarding Carnivore. Ironically, the review team itself came under fire for being too closely linked to governmental interests.

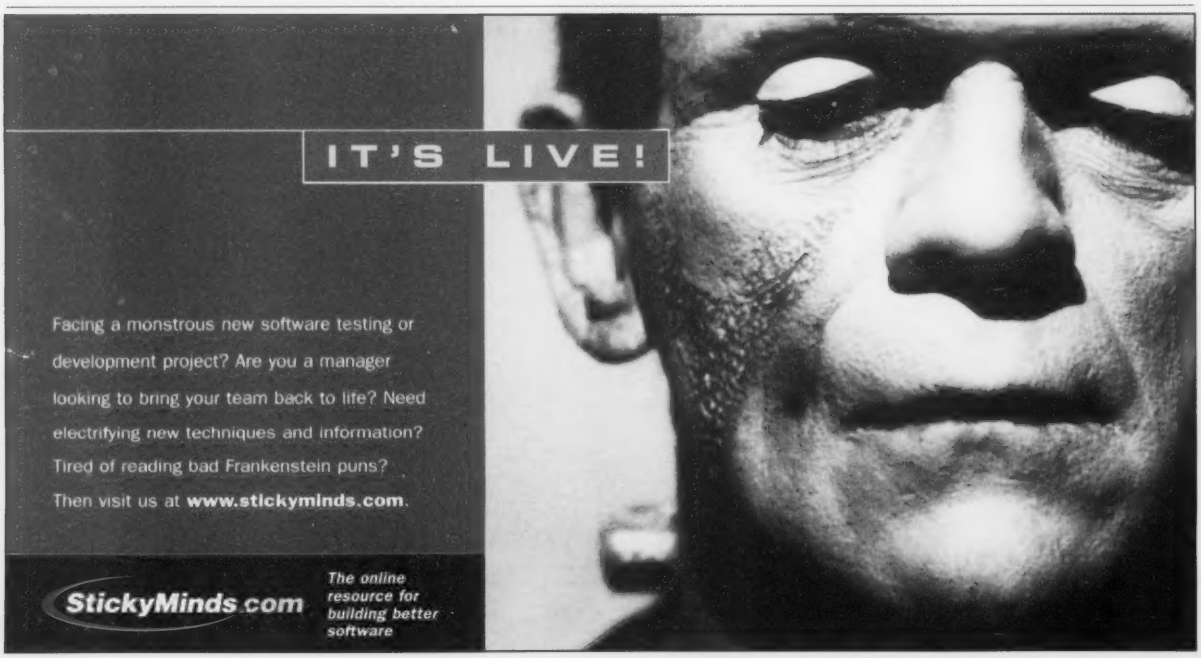
The first recommendation of the review team was to change the name of the program. Yet cosmetics alone won't get the job done. Apparently, the FBI also is prepared to make certain "upgrades" to the program based on the recommendations of the outside review team, but it hasn't yet specified the nature of those upgrades. If the upgrades truly will prevent snooping in the e-mail of people not suspected of criminal activities, the FBI should publicly provide such an explanation.

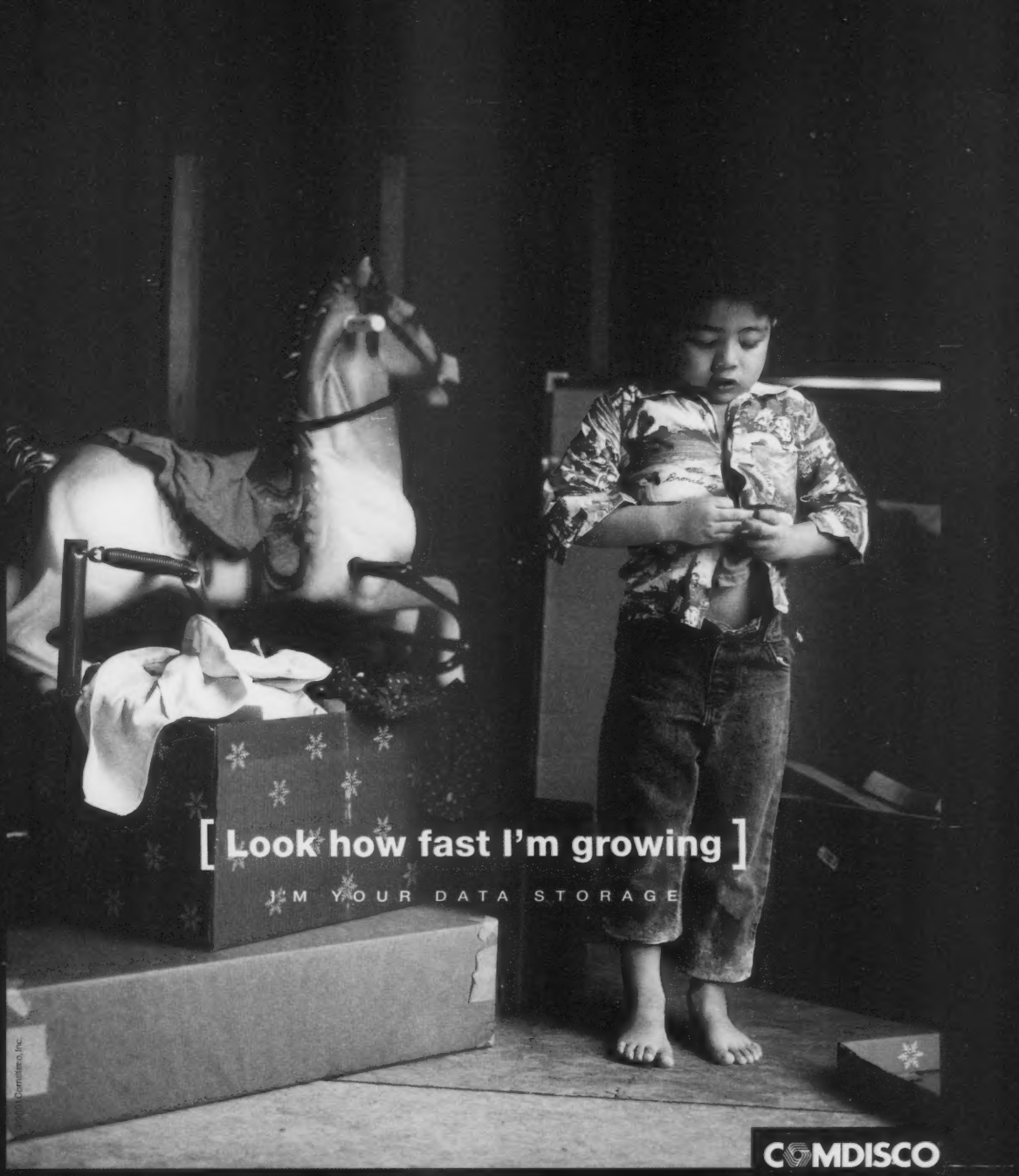
ERIC J. SINROD is a partner at the San Francisco office of Duane, Morris and Heckscher LLP. He can be reached at ejsinrod@duanemorris.com.

Without one, the FBI can expect likely action by Congress. Indeed, last year, when the controversy first emerged, legislation was introduced that would thwart police efforts to monitor Internet activities and that would require search warrants before law enforcement officials could access e-mail messages housed on servers.

The U.S. isn't the only country grappling with this problem. For example, last year, the U.K. passed the Regulation of Investigatory Powers Act. This law allows the British government to access e-mail and other encrypted Internet communications for surveillance purposes. Concerns have been raised that this law conflicts with the Human Rights Act of the European Union. As another example, Russia's intelligence agency, the Federal Security Service, reportedly is able to monitor Internet communications without the consent or knowledge of users.

While our government can't control the activities of foreign powers, it can certainly try to get it right here at home. Our government should employ necessary technological techniques to fight crime while candidly assuring innocent citizens that their privacy won't be violated in the process.





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WORKSTYLES

'Digital Missionary' Climbs Up Career Ladder at CarDay.com

What It's Like To Work at...

Interviewee: Lynna Dunham, technical field manager, or "digital missionary"
Company: CarDay Inc. (*www.carday.com*)
Main location: New York
Number of IT employees: Six full time, plus eight contractors (site hosting is outsourced)
Number of employees (end users): About 40. The company also provides IT support to a network of 50 to 60 car dealers in the Northeast.
Tenure: Since last May, about two weeks after the site launch. Dunham, a Shakespearean actress and self-taught technologist, joined CarDay as an administrative assistant after she "got really burnt out" working in restaurants.
If you were looking for stability, why did you go to a dot-com? "Because I wanted a fairly casual atmosphere that was dynamic and interesting, and I didn't think I could get that or a real growth opportunity at a [large company]."
Career path: May to September, administrative assistant; September to October, Web site redesign team; October to the present, field technical support. "I had never worked in corporate America before, and I underestimated what I knew."
What is a digital missionary? "I provide remote and on-site tech support to our car dealers. Each dealer has a kiosk where individual sellers can upload information about their cars. I install the kiosks and the software, set them up with a dial-up connection and e-mail, support a custom Web interface, help manage inventory and manage parts of the Web site."
What's it like to work with used-car salesmen? "It's pretty fun. We don't work with your typical plaid-pant-and-white-belt-wearing used-car salesmen. I have to hand it to them; they haven't always been online guys, and they're learning how to do it. What's funny is that I get called 'kiddo' or 'sweetheart' a lot."
Really? "I don't mind it."
How do acting skills come into play in your job? "They certainly enhance my interpersonal skills, but if anyone thought I was acting, I'd be dead. So I try not to. It does help, though, in terms of my communication and presentation skills: Having eight years of speech training is useful no matter where you are."
Do you still act? "Yes, I do voice-overs for Japanese cartoons."
What kind of IT training have you had? "No formal training. I'm trying to learn more about networking. I'd like to learn Java and start [a master's degree program in computer science engineering] this year."
Compensation: "I think it's competitive. We aren't paid big, huge salaries, but I feel I'm paid what I'm worth."
Bonus programs: "None that I'm aware of."
Workday: "About eight to nine hours, but if I'm traveling, then longer. I spend about half my time on the road. Yesterday, I put in a 15-hour day. There are no short days. Sometimes, I get called a lot on weekends. But I get a good rush from problem-solving. There's a little bit of heroism that I kind of dig."
Must people carry beepers? Cell phones? "Yes, I carry a cell phone. They're trying to give me a BlackBerry [wireless device], but I prefer my phone."
On-site amenities: "The company is very frugal. Even when dot-coms were being lobbed money hand over fist, [management] knew that wasn't going to last. So we're fairly perk-free."
Free refreshments: Coffee, soda, hot chocolate. "We have Beer Cooler Thursdays where we all get together after work, have a beer and talk about the company."
The last word: "I like being in a small start-up where you get more notice. If I were in a big company, I'd still be an administrative assistant. I wouldn't be in IT."

– Leslie Goff (lgoff@ix.netcom.com)

ED YOURDON

Minipostmortems

A TRADITIONAL PRACTICE IN software project management is the "postmortem," in which key members of the project team and representatives from the finance department and the quality assurance, process improvement and training groups determine whether the project really delivered the benefits that were promised, within the budget that had been allocated. The group also identifies the lessons learned from the project in order to help senior management do a better job of authorizing and budgeting future IT projects, as well as to help project leaders and developers do a better job of managing projects on a day-to-day basis.

Whether postmortems benefit senior management is debatable. Many project failures are swept under the rug, and the rapid turnover of senior executives reduces the chances that long-term lessons will be learned and applied from the experiences of recently finished projects. Unfortunately, postmortems rarely benefit project leaders or developers either, but at least at this level, they can offer constructive suggestions.

Why do postmortems provide so little value? In most companies, the key decisions affecting success or failure are made by people who disappear before the project ends. While such decision-makers may have documented what they decided, they rarely document *why* they made those decisions. Alternatives may have been considered, trade-offs may have been evaluated and risks may have been assessed, but this information usually isn't available to a postmortem that takes place a year or two later.

The survivors who participated in the latter stages of the project are typically too burned out and exhausted to write the kind of memoirs we've come to expect from generals and former presidents. And even if they did, who reads these documents? When was the last time you heard a project leader say to his team, "Before we get started, please spend the next few days reading through the postmortem reports of the past 25 projects we've done here at Acme Widget Corp. And then let's have a meeting to discuss how we can apply those lessons to our new project"?

The solution is quite simple: minipostmortems, conducted at the end of each project phase, each prototype or each incremental "version" of a system delivered to the customer. Depending on the project, this means that the minipostmortem is likely to cover work carried out during a couple of weeks or months. Thus, most of the key players are likely to still be involved and are likely to remember what they did and why they did it. The minipostmortem can usually be conducted in a single meeting, lasting a few hours — instead of the typical end-of-project postmortem, which can last for days or weeks.

Many project teams find that a good strategy is to schedule the presentation of a new version of a system to their users on a Friday morning, repair to the nearest tavern for a celebratory lunch, and then stagger back to the office for an afternoon minipostmortem. They then go home for a weekend's sleep in anticipation of getting started on the next version of the system.

The minipostmortem can be conducted in a single meeting.

Ideally, the benefits of a minipostmortem — the lessons learned — help the team members themselves, rather than some ill-defined community of future IT developers.

End-of-project postmortems produce aphorisms like, "Be sure to get the users involved throughout your project," while minipostmortems tend to produce cogent statements like, "We almost had a disaster with this version of the system because we forgot to invite Mary to our requirements-gathering session. And Fred from accounting was terrific in helping create acceptance test data, so we should get him involved even earlier for the next version."

And here's the best part: A succession of minipostmortems eliminates the need for an end-of-project postmortem. The final minipostmortem, at the end of the system's final deliverable version, is the end-of-project postmortem.

Yourdon is editor of Cutter IT Journal, *published by Cutter Consortium in Arlington, Mass. Contact him at* www.yourdon.com.

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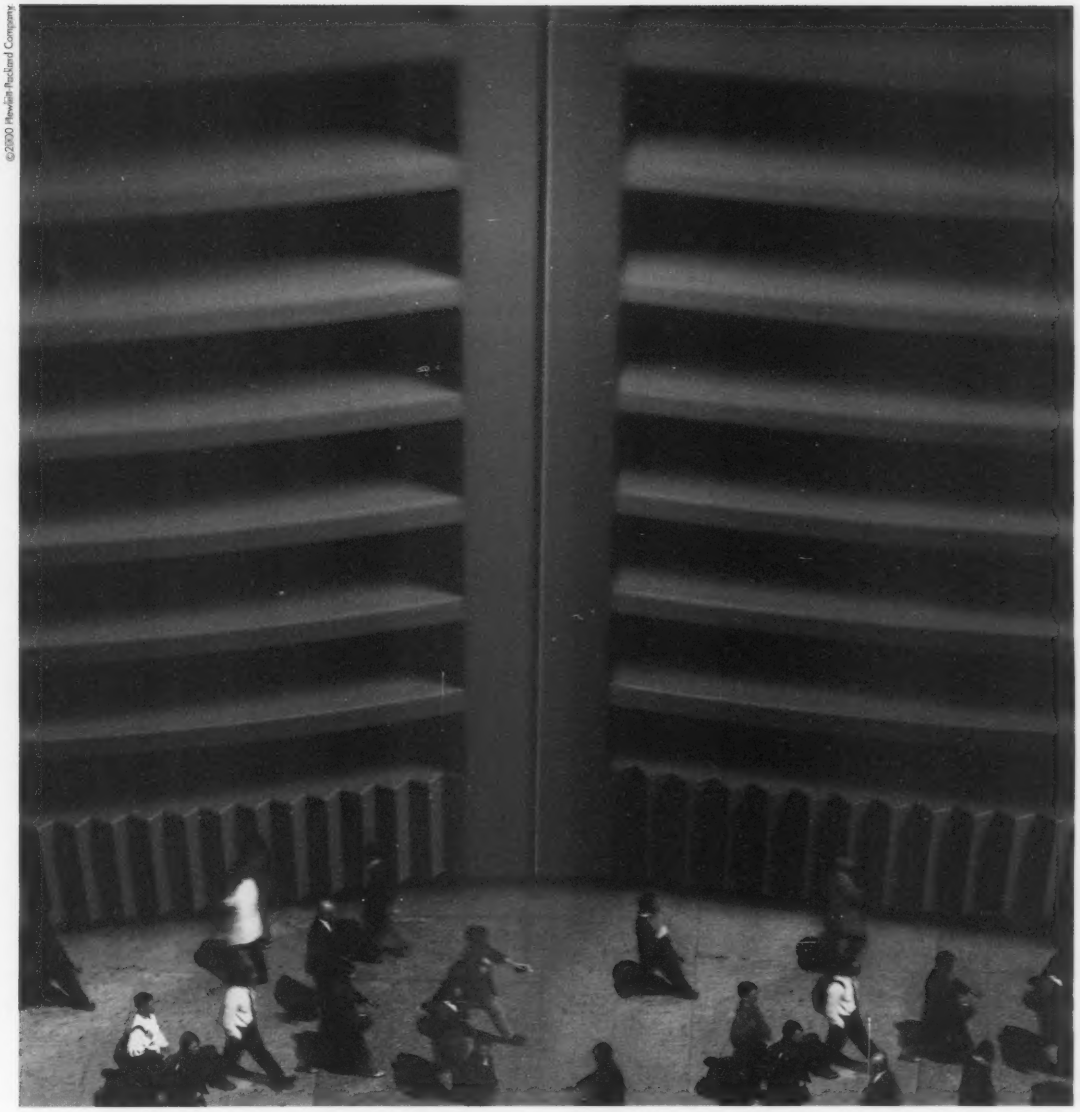

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BANKING ON OPEN-SOURCE ASPs

Outsourcers help speed time to market for open-source software development. By Mark Hall

A YEAR AGO, Gerhard Pohl fretted a great deal about taking The World Bank Group to an open-source computing model. Back then, he spent a lot of time trying to convince his superiors that not only was open source the right choice, but that it would also make good business sense to use an application service provider (ASP) to manage and support these applications for the Washington-based organization.

"It was a very new idea then. It took a lot of talking," says Pohl, the World Bank's head of business development for the Development Gateway, an investment services resource portal for developing nations.

Like other organizations considering open-source technology, most of the World Bank's debate was based on the business benefits. Pohl and others say the bottom-line rationale for using open-source applications is compelling for almost every organization.

The true value, they say, isn't just in the dollar savings, which are real, but also in the resilience it gives to IT projects in an otherwise volatile software market, because users control the source code if a vendor goes out of business or changes product strategies.

The World Bank's software management strategy crystalized last year in favor of open-source provider ArsDigita Corp., a $26 million software house in Cambridge, Mass. The global lending organization had been burned recently when America Online Inc. in Dulles, Va., purchased one of the bank's Internet software suppliers and changed the direction of the product it had been using. That experience helped turn the debate in favor of open source.

"Small and large Web vendors are at high risk of going out of business or getting bought these days," Pohl says. "But if we own the code, it's less of a threat."

Strength in Numbers

Carl Howe, an analyst at Forrester Research Inc. in Cambridge, Mass., says that to protect themselves with proprietary software vendors, users often are forced to "go through a weird negotiation process to put software code in escrow just in case [the vendor] goes out of business."

But, Howe says, the top reason most companies adopt open source is that it speeds time to market. A popular open-source product can have hundreds, even thousands, of developers worldwide adding features from which a large swath of users can benefit.

For example, Santa Cruz, Calif.-based Lutris Technologies Inc.'s Web application server, Enhydra, is the first open-source product to crack Forrester's Top 10 list of business software for the Web. The company's community at *www.enhydra.org* has more than 3,000 members.

Pohl emphasizes that time to market was another business advantage for using open-source technology, especially having ArsDigita host the product on its servers — not to mention the lure of lower start-up costs.

By making use of the ArsDigita Community System, an e-business application in which the source code is free, the World Bank is expecting to save as much as $300,000 in one-time costs over an equivalent proprietary package for the content-management portion of the Development Gateway, Pohl says.

"Controlling costs is important," agrees Ed Smith, director of business development at Sonics Inc. But it's controlling the code that remains the critical business reason behind adding open-source products to your IT tool chest, he says.

Sonic Boom

Sonics, a 5-year-old Mountain View, Calif.-based company that supplies online testing tools to semiconductor manufacturers, uses a thin-client user management product from WorkSpot Inc. in Palo Alto, Calif. The product lets users run client/server Unix applications on remote servers, but they can use them on their local PCs through a standard browser.

According to Charles Choi, Sonics' Web architect, "We need to see the source code in order to make changes," because some of the company's users need to have their access customized.

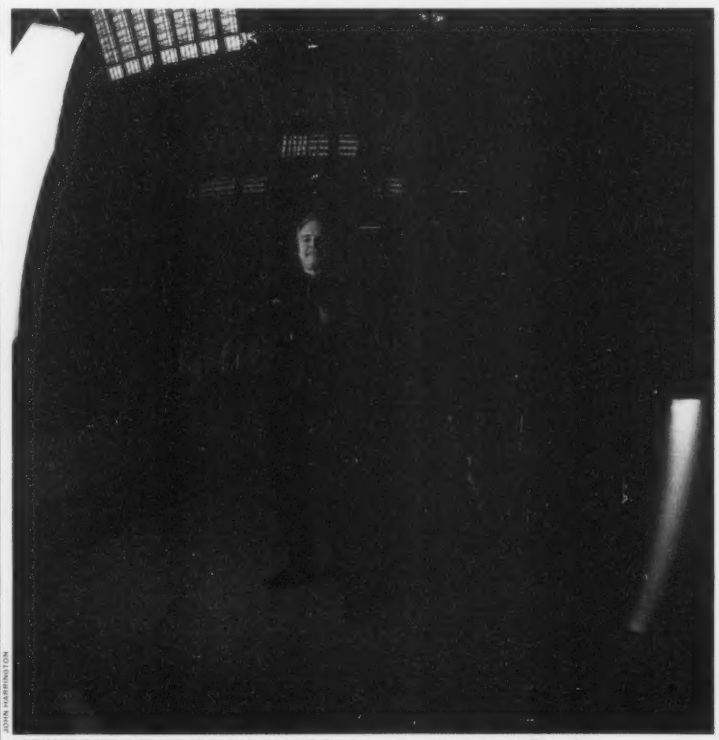
Smith says that although his company has established expertise with open-source technology and tools, he lets WorkSpot host the application because it helps keep administrative head count low.

At the Massachusetts Board of Library Commissioners (MBLC) in Boston, it was a lack of in-house IT expertise that led to the decision to use Boston-based ASP Harrison & Troxell Inc. (H&T) and its open-source directory service application for the 1,700 members of the state's regional library network, according to Paul Kissman, a library information systems specialist.

Initially, the agency simply wanted to off-load the work to an ASP. The H&T product happened to target library needs, Kissman says. Still, it didn't hurt that his own comfort level with open-source computing was quite high, because he had been using Linux technologies since 1994.

Peter Karlson, H&T's chief technology officer, says that, ultimately, open source gives users peace of mind.

"They have walk-away power, which is no small matter when so many companies are going out of business," he says.



JOHN HARRINGTON

GERHARD POHL at The World Bank Group took the open-source plunge with ArsDigita Corp.

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Community College Grads: Who Needs

Community college programs are proving their worth at turning out IT professionals well matched to corporate hiring needs. And in many cases, these are seasoned workers making career changes. By David Bernstein

AFTER HIS FIRST YEAR AT THE University of Iowa in Iowa City, Mitch Jones began to doubt whether medicine was his true calling. Not unlike many his age, he was unsure about his future path. And he worried about the debt he was piling up in student loans.

His mother made a suggestion: Quit Iowa and enroll in the mainframe programming program at Kirkwood Community College in Cedar Rapids, Iowa. If he didn't like it, he would be out only about $1,000 for the semester.

Jones took his mother's advice and went on to get his associate of science degree. He took a programming job at WorldCom Inc. (then MCI WorldCom) after graduation. Today, less than a year after he would have earned a bachelor's degree, he has been promoted to business analyst at WorldCom's Colorado Springs office.

Jones, who earns a salary in the mid-$40,000s assessing the potential cost of future mainframe applications, gives credit to the technical and business courses he took at Kirkwood.

"I'm proof that the community college system works," Jones says.

Jones is one of many who are truncating the usual time and cost of getting into the IT workforce by taking a two-year degree. Many are career-switchers trying to pick up skills quickly, often while still working. And many are finding that the lack of a four-year degree doesn't hurt them in the IT job market — employers are simply too desperate for workers.

"It's getting to be exactly the same as a four-year degree. Even the salaries are not different," says Cathie Price, recruiting manager at TechPros in Charlotte, N.C.

At the College of DuPage in Glen Ellyn, Ill., the vast majority of students in the computer information systems degree program won't transfer to a four-year school upon completion, says Steve Mansfield, associate dean of business services. That's a huge change from 10 years ago, when an associate's degree was just a stepping stone to a "real" diploma.

In fact, some students don't even wait the two years to get the associate's degree. Mansfield says that especially during the Y2k crunch, local companies such as Spiegel Inc. in Downers Grove, Ill., were hiring students straight out of programming logic classes.

The average age of community college students is 29, so there are plenty of second-career folks going that route. That appeals to some employers.

"While they're entry-level software engineers, they are not entry-level professionals," says Jeffrey Bohling, senior manager of application development at McCloud USA, a local exchange carrier in Cedar Rapids. "They come in with a lot of business knowledge, and that's the toughest thing to get."

The other thing employers say they like is the way community colleges are tailoring their curricula to meet the specific needs of area companies. Community colleges are eager to serve as job-preparation centers for local labor markets, while four-year schools like to emphasize lifelong skills and well-rounded intellects.

WorldCom looks more toward Kirkwood than to the University of Iowa for employees, says Tim Kregel, software development manager at the telecommunications giant. That's because Kirkwood gladly teaches the Cobol, JCL, DB2, assembler and AS/400 courses crucial for WorldCom employees. Iowa, which is heavily into Java and object-oriented technologies, doesn't even offer a Cobol class.

That kind of tailoring is the norm, not the exception, at community colleges, says Ed Leach, vice president for technology programs at the Mission Viego-based League for Innovation in the Community College (*www.league.org*).

At Kirkwood, for example, the faculty for each program listens to comments from an advisory committee made up of local employers and undergoes a review every three years. The review involves research into the local labor market, says John Henik, dean of Kirkwood's business department.

Still, there's no question that a community college program can't teach students as much as a full-scale, four-year program. Students at four-year schools have the time to learn several

"I'M PROOF that the community college system works," says Mitch Jones, who has a rewarding career at WorldCom thanks to a community college degree.

PATRICIA BARRY/IDG

s 'em?

computing languages and operating systems in some depth. They can also learn much more of the logical and methodological underpinnings behind the technology. And perhaps most important, they can get much more practice on implementation, testing and problem-solving projects than graduates of community colleges can.

"These programs are awfully compact. They try to teach an awful lot in a short time. So we expect to have to teach them some things once they're here," Bohling says.

Because of that, Bohling requests that Kirkwood's object-oriented classes focus on methodology over specific languages. If the student has a firm conceptual grasp of syntax and systems analysis, McCloud can fill in the specifics later, he says.

Kregel's recruits, who are hired primarily for software development and testing positions, also need training after they begin work. "You factor that in — that they might not be full contributors right away," he says. Nevertheless, "every one I've had was able to hit the ground running."

But not every employer sees an associate degree as sufficient.

"It does make a difference," says Gina Cristelli, a recruiting manager at the Denver office of Camden Vale Corp., a high-tech staffing firm in Oakbrook Terrace, Ill. While work experience counts more and more, she says, "I've found that most employers still want a four-year degree." It's hard to break the perception of a bachelor's degree as the underpinning of a successful career, she says. Many employers assume that community college graduates will be unable to advance in their careers, she adds.

Lyle Brown, a recruiting manager at EDP Contract Services in Austin, Texas, agrees. He says that while most requisitions he sees specify only an associate's degree as a requirement, only the lower-level jobs are actually open to those with two-year degrees.

"For programmers, network engineers, project managers and database managers, people want at least a bachelor's degree," Brown says.

Even Jones is aware of the ceiling he may encounter. That's why he says he plans to transfer his credits to the University of Colorado at Colorado Springs, where he will take classes to complete a bachelor's degree.

Some companies that like to hire community college graduates are now trying to pitch in to help improve the quality their local schools can offer — particularly addressing the common complaint that community colleges lack top-notch equipment for students to use. Lucent Technologies Inc. in Murray Hill, N.J., for example, donated old SPARC machines to DuPage that were too out-of-date for the company

> These programs . . . try to teach an awful lot in a short time. So we expect to have to teach [community college graduates] some things once they're here.
>
> **JEFFREY BOHLING, SENIOR MANAGER, APPLICATION DEVELOPMENT, McCLOUD USA**

to use but better than what the school had in its classrooms.

Leach says many community colleges increase internships to make up for a shortage of equipment. Students are placed at companies that have the servers and software that schools lack. Jones, in fact, began as an intern earning $10 per hour at MCI WorldCom while still at Kirkwood.

Some technology companies are helping by providing curriculum assistance as well as equipment.

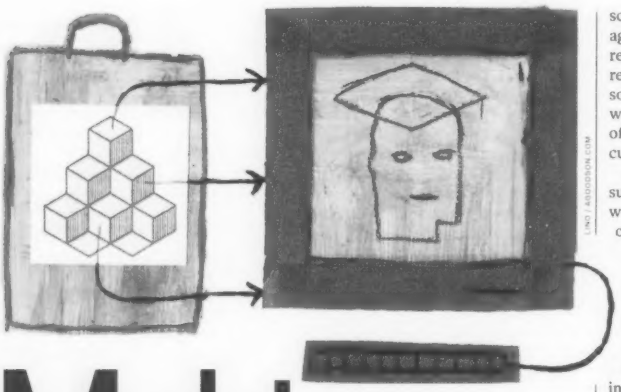
Microsoft Corp., for example, provides lesson plans and instructional resources at an online site for community colleges. Three years ago, the company launched a mentor program to train community college faculty in teaching Microsoft software skills. Cisco Systems Inc., Novell Inc. and Oracle Corp. also have strong relationships with two-year schools.

Community college instructors often come directly from the workplace. Students like Jones say faculty members such as Sam Shamsuddin, a network engineer at Lucent who teaches Unix, C++ and Java at DuPage, can provide them with an advantage over tenured university professors who have chosen to pursue academic lives.

Community colleges can also change curricula faster than universities. "They are more fleet of foot," says Diana Carew, manager of community and technical college relations at Microsoft's Education Solutions Group.

For Jones, at least, his mother's advice to switch to community college worked out for the best. She had a feeling it would — she had earned an associate's degree in mainframe programming herself two years earlier. ◗

Bernstein is a freelance writer in Watertown, Mass.



Making the Grade

To meet the skyrocketing need for business-savvy IT pros, universities and businesses are teaming up to produce a new breed of technologist.

By Zachary Tobias

FOR IT MANAGERS, finding newly graduated job candidates with the right mix of skills is no easy task.

Just ask Ron Griffin, CIO at Atlanta-based The Home Depot Inc. Overseeing an IT team of about 1,200 people, Griffin has seen plenty of programmers come and go. Too many of them, he says, lack the business know-how and communications skills needed to administer IT systems in business.

The problem, Griffin says, usually starts in school: IT programs at universities tend to teach students how to code but not how to use technology to actually affect a business's bottom line.

"A lot of guys have technical skills," Griffin says of most new hires out of college. "But in terms of fully understanding the business outcomes of IT systems, there's something missing."

Finally, though, the educational tide seems to be turning. IT schools — both new and well-established ones — are teaming up with the corporate world to produce the kind of well-rounded candidates IT organizations need most.

Griffin says he's already seen the changes, particularly in his new recruits from the University of Alabama. Starting about five years ago, the school did a major overhaul of its management information systems program, requiring students to do internships in real companies, sending more professors out into the field to collaborate with businesses and enlisting the help of CIOs like Griffin to fine-tune its curriculum.

Griffin says he's amazed by the results, and he wishes more schools would follow suit. "This is the best crop I have ever seen," he says of recent recruits from the Tuscaloosa-based university. Since most of the students have already worked in companies before they graduate, explains Griffin, they understand that IT projects are valuable only insofar as they can help a business increase profits or lower costs.

At the same time, the graduates have a solid foundation in the nuts and bolts of how information systems work, as opposed to the shallow "black-box perspective" he says many coders have.

The University of Alabama isn't the only school teaming up with businesses to offer better IT programs. When the University of Nebraska at Omaha launched the Peter Kiewit Institute in 1996, corporations in the state provided $47 million to get the new engineering and IT school up and running. They also played a leading role in designing the school's curriculum and continue to work closely with its instructors and students.

For example, an expert-in-residence program allows star IT executives to study and teach at the school, while students and faculty regularly do internships in the IT departments of companies such as The Mutual of Omaha Cos., IBM and The Boeing Co.

"What we look for are win/win/win situations — situations where the companies, the students and the university all benefit," says Winnie Callahan, executive director of the school.

Corporate Feedback

When Pennsylvania State University began plans for its new School of Information Sciences and Technology (IST), which opened in the fall of 1999, administrators took a similar approach, meeting with managers from Fortune 100 companies, start-ups and nonprofit organizations for almost two years before the program started.

"They came back with some very strong recommendations," says James Thomas, dean of the State College, Pa.-based school. "The first thing they said was, 'Don't send us any more C++ programmers. We need people who understand how technology can make a difference in an organization.' "

So Penn State developed a curriculum that tries to do just that. It begins with Introduction to IST, what sophomore Bill Them calls "a 30,000-foot view of everything in the world of IT."

> **A lot of guys have technical skills, but in terms of fully understanding the business outcomes of IT systems, there's something missing.**
>
> RON GRIFFIN, CIO, HOME DEPOT

Like introductory courses in other IT programs, the class includes basic programming skills. But it also introduces students to the social and legal issues surrounding new technology and, like many courses in the curriculum, stresses oral and written skills.

Real-World Exercises

IST classes also focus on team-based projects that force students to develop their skills in real-world settings — something the school's board of advisers recommended from the get-go.

In one of Them's classes, for example, students teamed up to develop Web sites for enterprises in the campus area. "We had to go to a local business and ask them, 'What could we do for your company that would make your life easier?' " he says, explaining that the class was as much about how to respond to a client's needs as it was about programming. Them's group developed a site where Penn State's bookstore could market souvenirs, while another developed an online classifieds page where snowboarders could exchange equipment.

That kind of experience is sure to give Them a leg up when he enters the workforce. So will the summer internship he did in systems development at Bethesda, Md.-based aerospace company Lockheed Martin Corp., where he may return to work after graduating. That is, if he doesn't win Penn State's U2B Fox Challenge, an entrepreneurial contest in which groups of students compete for $250,000 to start a business of their own design.

Whatever he does, Them says, the IST education has been ideal. Though he showed a gift for programming in high school, "sitting all day with my head in a screen" wasn't for him, and he says he wanted to be more than just a techie. Fortunately for him, that's exactly what IT managers need most. ◗

Tobias is a freelance writer in Santa Cruz, Calif.

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KATHLEEN MELYMUKA/DIVERSITY

Women in (or Not in) IT: A Variety of Views

A RECENT COLUMN ABOUT high school girls' perceptions of careers in corporate IT [Business, Jan. 8] brought an unusual number of illuminating, heartfelt and downright diverse responses from readers.

I was surprised that the findings of Arthur Andersen's "Growth and Retention of Women" study were controversial. They backed up what I've been hearing from women and girls for years: IT per se is seldom attractive to girls, but when they understand how it can be *used* as a tool in careers as diverse as medicine and design, many girls begin to see its value. The challenge, I thought, was for the corporate world to show girls that there's more to IT than pasty-faced geeks chained to their cubicles.

Many readers disagreed. "Your reasoning is [an] insult to girls who choose against IT as a profession," writes Matthew E. Ferris of Wheaton, Ill. "Could the reason be that it is simply not what they want? Why isn't it a crisis that boys are not choosing to be nurses when there is such a shortage of them?"

Others accused me of raising the banner of political correctness over one of the last bastions of meritocracy. "The IT world is already the most diverse workforce on the planet," says Ezra Marsh of Baltimore, but "you obviously see IT as a place where we can jam a little more PC down everyone's throat."

Paul Hardy wants us all to relax. "Girls are characterized by nurturing, caring, teaching, loving, home and family-making and relationship-building and maintaining," he writes. Though feminists may pressure girls into IT, he implies, many will find it "unsatisfactory and unfulfilling and will want to pursue something more to *their* liking: jobs such as doctor, nurse, teacher, professor, musician, writer or, the job of all jobs, *wife* and *mother*."

But others report that when girls try IT, they often like it. Jerrell W. Habegger writes that four years ago, Susquehanna University in Selinsgrove, Pa., began requiring all business majors to take an IT-intensive curriculum. "It has been very rewarding to see many of our women students go into information technology jobs who would not have even considered it if we had not required it," he says.

A recent IT graduate writes that she is quickly becoming disillusioned by job interviewers who treat her like a Barbie doll. "I have been asked questions like 'Are you comfortable with math?' " Elizabeth writes. "I studied calculus-based chemistry and physics for engineers. I would like to see some attitude changes, but I am not going to hold my breath."

Better not, according to Jeff Younker of Oakland, Calif., who has watched one very high-potential IT woman he knows go underused and unappreciated for years. "She has languished in poor IT positions," he says. "She's had to deal with both sexual harassment and what can only be called institutional deafness."

KATHLEEN MELYMUKA is a *Computerworld* feature writer. Contact her at kathleen_melymuka@computerworld.com.

From the perspective of 20-something years in IT, Jane's view is no rosier. "I have worked nights, weekends and holidays in windowless, too-cold/hot/stuffy ever-shrinking cubicles, squinting 10 hours a day at lousy monitor screens, while being paid less than the men in the department and continually passed over for promotions," she writes. "Perhaps your conclusion should say ' . . . half the future labor pool in the U.S. *knows* that you can't lead a fulfilling and meaningful life while working in most corporate IT settings.' "

Andrew Wright of Toronto opines that the "Dilbert" comic strip does have it right. "I have found corporate America (and Canada) to actually *be* about money," he writes. "If the IT industry wants to attract people — not just women — whose goals and metrics do not revolve around money, it is not just a case of the IT community changing their image; they need to change the *basis* of that image."

Fifteen years in IT has taught Kathryn Kostohryz of Rowayton, Conn., that girls should follow their instincts and let the corporate world be damned. "Corporate America is not for everyone," she writes. "Girls [should be] shown thought-provoking applications of IT in serving people in the fields they are interested in — not just corporate America."

And as for corporate America, she says, it's time to sink or swim. "If corporate America can't figure out what the problem is," Kostohryz writes, "well, then, f--- 'em." ◗

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■ **E-LEARNING CONFERENCE & EXPO**
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■ **WBT EXECUTIVE SUMMIT 2001**
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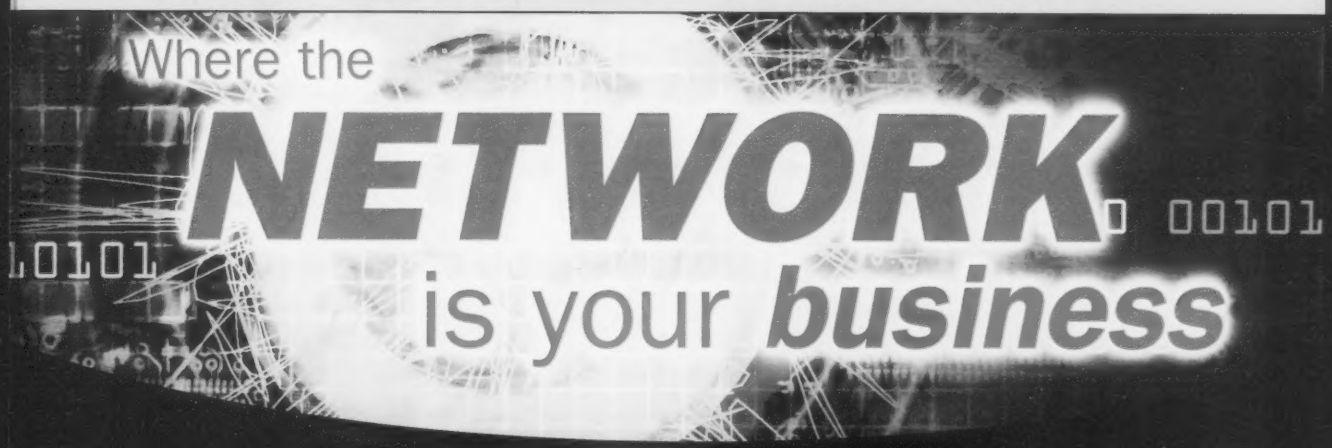

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The Art of Success

New IT books focus on Cisco, e-commerce, dot-coms and cryptography

The ePolicy Handbook: Designing and Implementing Effective E-Mail, Internet and Software Policies, *by Nancy L. Flynn (Amacom Books, 261 pages, $19.95).* If you see potential problems from your company's use of e-mail and software, you may want this book as a handy desk reference. Flynn, who conducts seminars and workshops on Internet etiquette and electronic writing, doesn't just dispense advice, she also offers examples of drafting IT-related usage policies. If your company hasn't yet established a policy on electronic communications, concentrate on Chapter 2, which offers a sample questionnaire that can be used to gauge how everyone in the company uses IT. Also, read the 10 tips for enhanced computer security in Chapter 5.

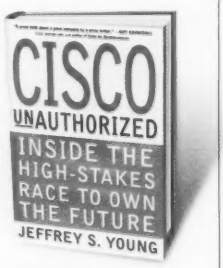
— Rick Saia

Evolve! Succeeding in the Digital Culture of Tomorrow, *by Rosabeth Moss Kanter (Harvard Business School Press, 321 pages, $27.50).* Kanter, a Harvard Business School professor, addresses how the Internet will affect tomorrow's business world, especially generational change and intercompany collaboration. The main take-away is in Chapter 5, where she offers five lessons from her experiences in collaborative commerce. In short, she says, build trust with your partners, build resources (or what she calls "collabronauts"), embed your business in those of your partners, exercise diplomacy to handle the partnership politics and remove internal barriers to collaboration. Kanter also advises companies on how to hire the talent to accomplish their goals, buttressing her comments with survey data on what today's workers want.

— Rick Saia

E-Leadership: Proven Techniques for Creating an Environment of Speed and Flexibility in the Digital Economy, *by Susan Annunzio and Julie Liesse (The Free Press, 232 pages, $25).* Details how leaders at Old Economy companies can transform their companies to meet the challenges of the 21st century.

— Kevin Fogarty



Cisco Unauthorized: Inside the High-Stakes Race to Own the Future, *by Jeffrey S. Young (Prima Communications Inc., 299 pages, $27.50).* The author calls San Jose-based Cisco Systems Inc. — one of the most successful companies of the Internet age — a "hollow corporation" whose relentless practice of acquisitions and outsourcing have left it a top sales company with no technological center.

Young presents Cisco CEO John Chambers as the Zen master whose focus is the good of the Internet. He portrays the company as simply the best of those that strived to ride the growth of the Internet.

The question Young leaves unanswered is whether Cisco can turn around its latest set of financial challenges and continue to acquire or outpace the start-ups that it fears.

— Kevin Fogarty

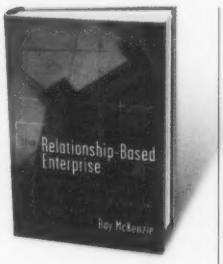
Secrets and Lies: Digital Security in a Networked World, *by Bruce Schneier (John Wiley & Sons, 432 pages, $29.99).* Schneier, an uber-cryptographer, knows his subject matter cold. The challenge, however, is that he seems to have a limited feel for the interactions and tribal patterns of audiences outside the security clique. These occupationally derived shortcomings are reflected throughout the book, which is way too sterile for my taste.

The book struggles to depict the dramatic arc of good guy vs. bad guy, the tension of who can be trusted and who can't and the criticality of the systems that lie at the heart of the New Economy. At times, it reads more like a stream-of-consciousness travelogue across a network topology, written by a cryptography-addicted security guru whose message may have gone dangerously out of style.

The book has too much technobabble and is too lengthy and unclear for casual business readers, but it's also too light technically for security professionals or security-aware network architects.

If you're looking for a guide on security as a way to let the right people in at the right time to access the right information, *Secrets and Lies* tells very little. Try the biannual "Information Security Status Survey" published by the Information Security Forum, which does a tremendous job of identifying the major digital security risks to individual businesses and provides thoughtful guidance on the most effective ways to control them.

— Thornton May, chief awareness officer at Waltham, Mass.-based security consultancy Guardent Inc. and a Computerworld columnist.



The Relationship-Based Enterprise: Powering Business Success Though Customer Relationship Management, *by Ray McKenzie (McGraw-Hill Ryerson, 353 pages, $27.95).* McKenzie includes a compilation of experiences at DMR Consulting Group Inc. in Edison, N.J., as well as his work on how to identify customers and build tighter relationships with them by focusing on the integration of te hnology and processes.

— Kevin Fogarty

E-Business Intelligence: Turning Information Into Knowledge Into Profit, *by Bernard Liautaud with Mark Hammond (McGraw Hill, 287 pages, $27.95).* How to get your company up to speed for the Internet economy. The book includes anecdotes from several companies, notably British Airways PLC and Zurich Financial Services.

— Kevin Fogarty

Information Anxiety 2, *by Richard Saul Wurman (Macmillan USA, 295 pages, $29.99).* An update of Wurman's 1989 groundbreaking original, this version focuses on how technological advances on the Internet and in other media can hinder understanding of the information they're meant to convey. Wurman also discusses how the needs of the audience change how information should be structured.

— Kevin Fogarty

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Dear Career Adviser:

I have a bachelor's degree in computer science and about eight years of work experience, including 18 months as a member of an engineering team focusing on Internet portals and system architecture. I'm also employee No. 15 at an 80-person company that's seeking to be acquired. Part of my decision to stay or leave depends on what would happen to my stock options. Would I be treated the same as senior management?

— EMPLOYEE NO. 15

Dear Fifteen:

According to John Marlow, an attorney at Bay Venture Counsel LLP in Oakland, Calif., what happens to your options depends largely on whether you think you'll be hired by the acquiring company as part of the merger — and if so, for how long. This is the fear of many employees during mergers.

If you continue with the new entity, your stock options would probably either continue to vest according to the prior schedule or vest immediately if the acquiring entity doesn't assume these options. Employees who aren't hired cease vesting. If you are let go shortly after the merger, your vesting would stop then. Senior executives sometimes have "double-trigger" protection in their options agreements. These provide for immediate vesting of options if the company is acquired. But again, these clauses usually only apply if the executives are actually hired by the merged entity.

Options are also handled differently if the acquiring company is public or private, cautions Marlow, so ask a securities attorney for specifics.

Dear Career Adviser:

I'm based in the Midwest and was laid off after working for an Internet company in the business-to-consumer space. My degree is in computer graphics, and I've held several senior Web designer jobs for ad agencies and consumer products companies. My background emphasizes the creative side of B2C. I'm concerned about getting hired and staying in the Midwest.

— CREATIVE CONSUMER

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

Dear Creative:

Right now, "creative" is getting a bad rap, says Ed Collins, an Internet consumer marketing and creative development consultant in Chicago. In your interviews, he says, you must differentiate yourself as someone who contributes to the bottom line and who understands marketing and how creative development impacts a business initiative.

When you interview, discuss how you have developed a Web site or executed a promotion. Describe why your contribution isn't just something hip that has won awards, but a business effort that's purposeful for your market and aligned with profiling buyers, understanding demographics and building results.

According to Collins, Chicago is getting hit with layoffs somewhat later than California's Silicon Valley and New York's Silicon Alley. But there are still opportunities. If you're still focused on end-user consumers, you should target large paid-member-supported portals and software behemoths that are getting ready to introduce wireless devices and set-top boxes.

Or expand your horizons to include corporate Fortune 1,000 companies that are now introducing Web initiatives to optimize their manufacturing, distribution and sales processes.

Remember, advises Collins: In the current economy, companies are less concerned with innovation and creativity — they want to maximize what's there.

Dear Career Adviser:

I'm a webmaster at a small company with two years of experience working on our intranet, mostly using Microsoft's FrontPage. I have an associate's degree and some HTML courses. I think I'll have a better career by moving to a larger company.

— LARGE OVER SMALL

Dear Large:

Stability aside, larger companies with more than 100 people typically have more internal needs for custom Web applications, and this requires more than HTML skills, says Web developer Josh Ettwein, CIO of Mission VI in San Diego.

Learn to write basic Web applications using Microsoft Corp.'s Access and Active Server Pages (ASP). This will enable you to move onto full-scale development using Microsoft SQL Server and ASP. In less than a year, you could be doing very well for yourself, says Ettwein. The salary difference between a webmaster and a Web developer is on the order of a two- to threefold increase. ◗

BRIEFS

CRM to Take Off

The North American market for customer relationship management (CRM) software is expected to grow from $3.9 billion last year to $11.9 billion in 2005, according to a recent study by Datamonitor PLC, a London-based business information firm. The market for CRM application service providers is expected to grow 128% in the next five years, climbing to $431 million, the study found.

CEO Tryouts

As technology firms continue to suffer from the economic downturn, they're getting more cautious about hiring top executives. Buster Houchins, CEO of Cleveland-based search firm Christian & Timbers, said a growing number of technology firms are giving new executives the title of chief operating officer (COO) so they can prove themselves before taking over as CEO.

Despite the lower title, compensation for COOs is generous: They can earn $300,000 to $400,000, with 3% to 4% equity. And their deals usually include prenegotiated escalators granting another 2% to 3% equity when they become CEOs, according to Houchins.

System Warns of Health Threats

EYT Inc. in Chantilly, Va., formerly Ernst & Young Technologies, last week announced the launch of its Medical Surveillance System, an early warning system for infectious disease outbreaks or bioterrorism attacks.

When a patient visits an emergency room, for example, data is collected by medical personnel. If certain indicators are identified, the Internet-based system notifies nearby public health offices so they can be on immediate alert to potential health risks.

Shipping in XML

St. Louis-based Transentric, a division of Fenix Enterprises, last week announced the development of an open XML standard for e-commerce transactions between carriers and shippers.

TranXML is a vendor-neutral format allowing carrier and shipper legacy systems to exchange data for transportation and logistics. The first release of TranXML will be next month. Licensing is free of charge.

Dallas-based Fenix is a technology holding company formed by Omaha-based Union Pacific Corp.

Bid.com to Build New U.K.-based Exchange

The Skerman Group, a U.K.-based trader of used factory equipment for the confectionary and pharmaceutical industries, selected Mississauga, Ontario-based Bid.com International Inc. to build an online marketplace for companies that want to buy, sell or trade new or used machinery.

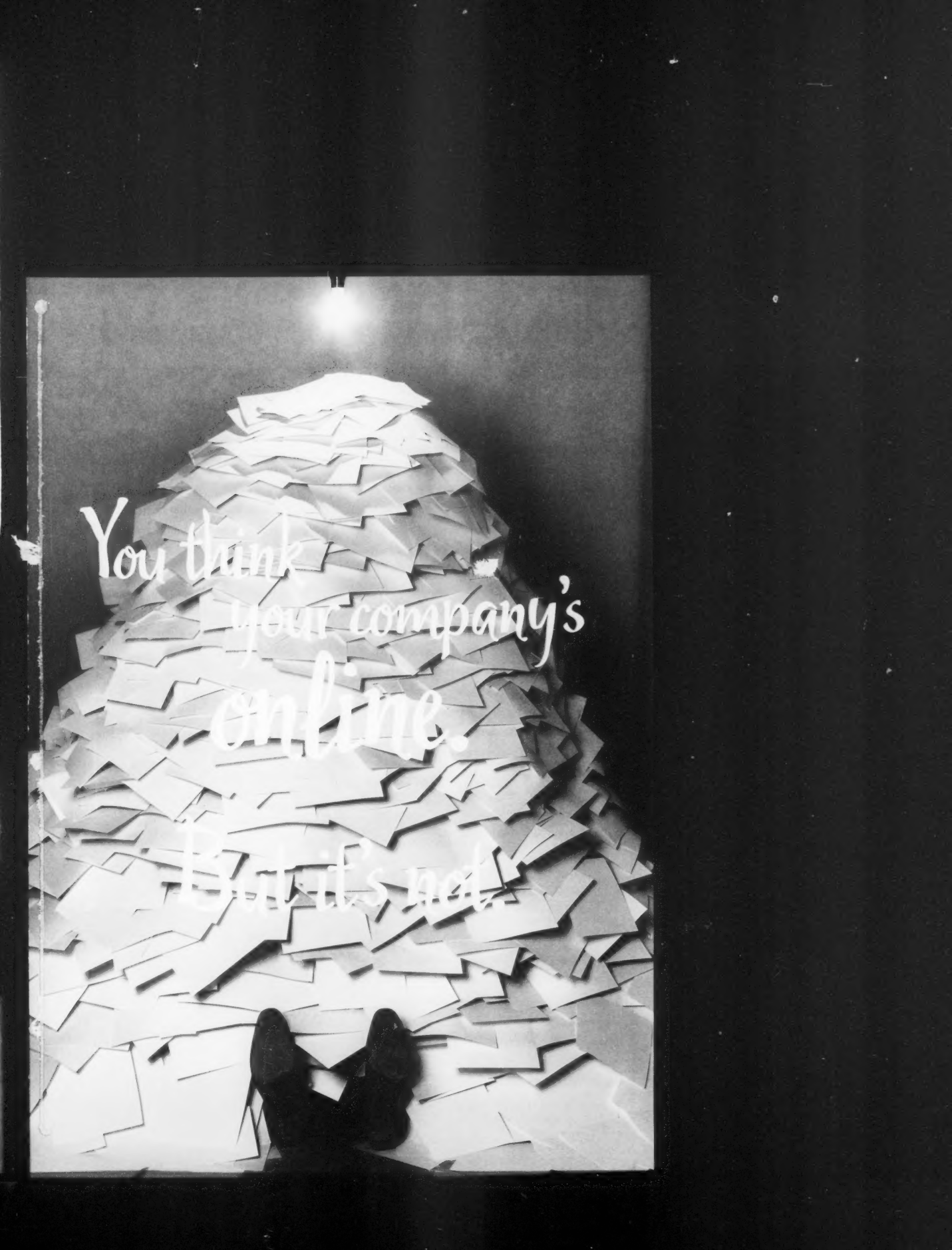
Trimming Inventory

LaVergne, Tenn.-based Ingram Book Group, a large wholesaler and distributor of trade books, has selected software from E3 Corp. to streamline the inventory process at its six distribution centers.

Ingram said it chose Marietta, Ga.-based E3, which specializes in advanced inventory management systems for corporate users, to help reduce its unprofitable excess inventory.

Directory Tools

Wells Fargo & Co., a San Francisco-based financial services company, last week announced that it has selected NetPro Computing Inc.'s DirectoryAnalyzer to monitor and troubleshoot its global deployment of Active Directory for Microsoft Corp.'s Windows 2000. Scottsdale, Ariz.-based NetPro, a developer of directory services management and security software, offers the DirectoryAnalyzer at $12 per network user or device, with subscription pricing available.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❑ True, there are more documents online than ever before. But it's also true that we are creating more paper documents than ever before: twice as many as just five years ago. The reason is simple: Most companies have lots of off-ramps that turn electronic documents into paper documents, but almost no one has lots of on-ramps capable of converting paper documents into electronic ones.

❑ In fact, giving you new ways to leverage your IT investment by bridging the frustrating gap between the paper world and the electronic world is exactly what the Xerox Document Centre system was designed to do.

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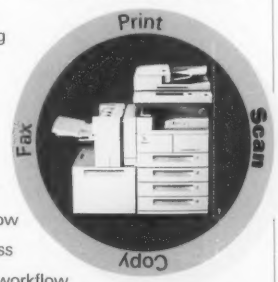
❑ For starters, a Document Centre lets people work the way they are used to working—you can scan documents in the same place you print or copy them—it's that easy and that accessible. Of course, the Document Centre gives workgroups of 10 or more desktop control over everyday functions like printing, copying, PC faxing and finishing. What's more, by making document imaging an "everyday" function, the knowledge and information recorded in paper documents can now become a seamless part of the digital workflow.



the online world is now open for business.

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Going out to the hallway and scanning large documents into the digital stream at up to 65 ppm is certainly efficient, but the important question remains: Where is all that information going, and what can you do with it once it gets there?

❑ Document Centre lets you scan directly to industry-standard messaging and collaboration platforms like Microsoft Exchange, Lotus Notes or Domino.Doc.

Scan 65 ppm

3 easy steps

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2 Select destination
3 Press green button

❑ You can scan directly to a Web repository, so anyone has instant access to information from a remote location.

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The Web
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We have hundreds of customers who report impressive results. But here's one in-depth story of how a Document Centre solution reduced one organization's work-cycle time from three days to just three minutes.

The Customer:

Center for Technology Management, in a prominent Midwestern research institute.

The Problem:

There are dozens of huge file cabinets overflowing with documents—patents, notes and contracts about inventions the university owns. Each year up to 1,500 new folders are added. Every day, dozens of people call and request files. By law, the university must provide public access to any of these thousands of complex scientific documents for reference, revision, notation or collaboration. And it must be done for 25 years. The commitment of time, space and personnel is large and growing.

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Product Quicktake

Spotlight on iWay Software for e-Business Integration

ebizQ
the insider's guide to e-business integration
www.ebizQ.net

iWay Software, launched in February 2001, is a wholly owned company of Information Builders Inc. All of Information Builders' middleware products were spun off as iWay product offerings. iWay Software has an enviable position for a new startup, with $43 million in software licenses, 2,000 customers and no debt.

The iWay Enterprise Integration Suite includes pre-packaged software components that enhance and extend the development and deployment of message broker and application server applications. The suite includes more than 120 intelligent adapters for connecting to databases, legacy applications and different file formats. iWay also provides connectors to other middleware technology and messaging systems as well as to mobile devices. The iWay Enterprise Integration Suite offers a "channel architecture" that enables applications and components of the e-business infrastructure to plug into common, reusable integration components that service back-end databases, files, applications and transaction systems. It makes connecting e-business applications faster and easier by enabling reuse of the integration technology across many different solutions.

An important piece of the iWay marketing strategy is a partnership with IBM that includes cross-licensing technology, co-marketing and selling. iWay Software is a tightly integrated cross mix of IBM technologies and Information Builders EDA/SQL with new ebusiness extensions which provide a robust ebusiness integration toolset.

Additionally, iWay technology can be embedded in other applications to provide fast connectivity with mainframe applications and disparate data sources. iWay Software has established a partnership program to help independent software vendors embed iWay technology and has more than 40 partners in the program.

Product Description

The iWay Enterprise Integration Suite creates a relational metadata view of all the environments to be integrated. It makes everything look like data. Through a point-and-click interface, the user can select the target information from the tables and automatically transform the data formats into the different environments. The suite also enables programmers to reconfigure and enhance the information before it is sent to back-end systems, including checking to make sure there is sufficient inventory or performing calculations on data values. The suite includes the following modules:

- iWay Enterprise Integrator embeds MQSI and enables message flows to be graphically defined. It makes process flow application development faster and easier by allowing one process to coordinate many applications. It also provides connectivity to back-end databases and applications. If customers already own MQSI, they can purchase individual iWay components to add the functionality to their systems. The connectors and adapters can also be used with other integration broker products. iWay Integrator uses XML as the data format.
- iWay Adapter Suite provides access to more than 120 information sources on 35 platforms, including all types of relational and nonrelational data, transactions and application packages. The adapters can be used with integration brokers and application servers, and enable developers to use SQL to access information in all the sources.
- iWay Enterprise Connector Suite provides connectivity from standard industry interfaces, including ODBC, JDBC, XML, ActiveX/DCOM and OLE/DB. Connectors are also available for third-party application servers, Java Virtual Machines and messaging systems.
- iWay Application Server adds integration components to the IBM WebSphere Advanced Edition application server. It includes a set of construction tools that are added to the palette of Visual Age for Java and automatically generates the integration code. The iWay Application Server enables developers to use a single development environment for integrating Web applications with back-end systems.
- Mobile Computing Server is a mobile version of the iWay Application Server. It is built with Java components and can run on WebSphere, BEA or iPlanet Web servers. The Mobile Computing Server enables the developer to define a mobile device and provides both mobile communications and integration to back-end systems. It provides back-end connectivity for PDA servers from Aether ScoutSync and Puma Technologies' Intellisync. Additionally, iWay has partnered with NovaSync to create a mobile application for distributors and route-sales companies.

iWay Software Inc.
at a glance

Product: iWay Enterprise Integration Suite
Product Type: Messaging, EAI, legacy integration, mobile integration, application server

Address: Two Penn Plaza
New York, NY 01021-2898
Phone: (212) 330-1700
Fax: (212) 564-1726
Web Site: www.iwaysoftware.com

Founded: February 2001 as a spin-off of Information Builders
Ownership: Private

Total Employees: 285
Total Employees in Service/Support: Service and support are done through Information Builders Worldwide and partners
Total Employees in R&D: 285
Number of Customers: 2,000
Number of Installations: 5,000 installations of middleware

Total Company Revenue: iWay began its business with $43 million in software licenses for middleware products sold by Information Builders in fiscal year 2000.

Written by ebizQ.

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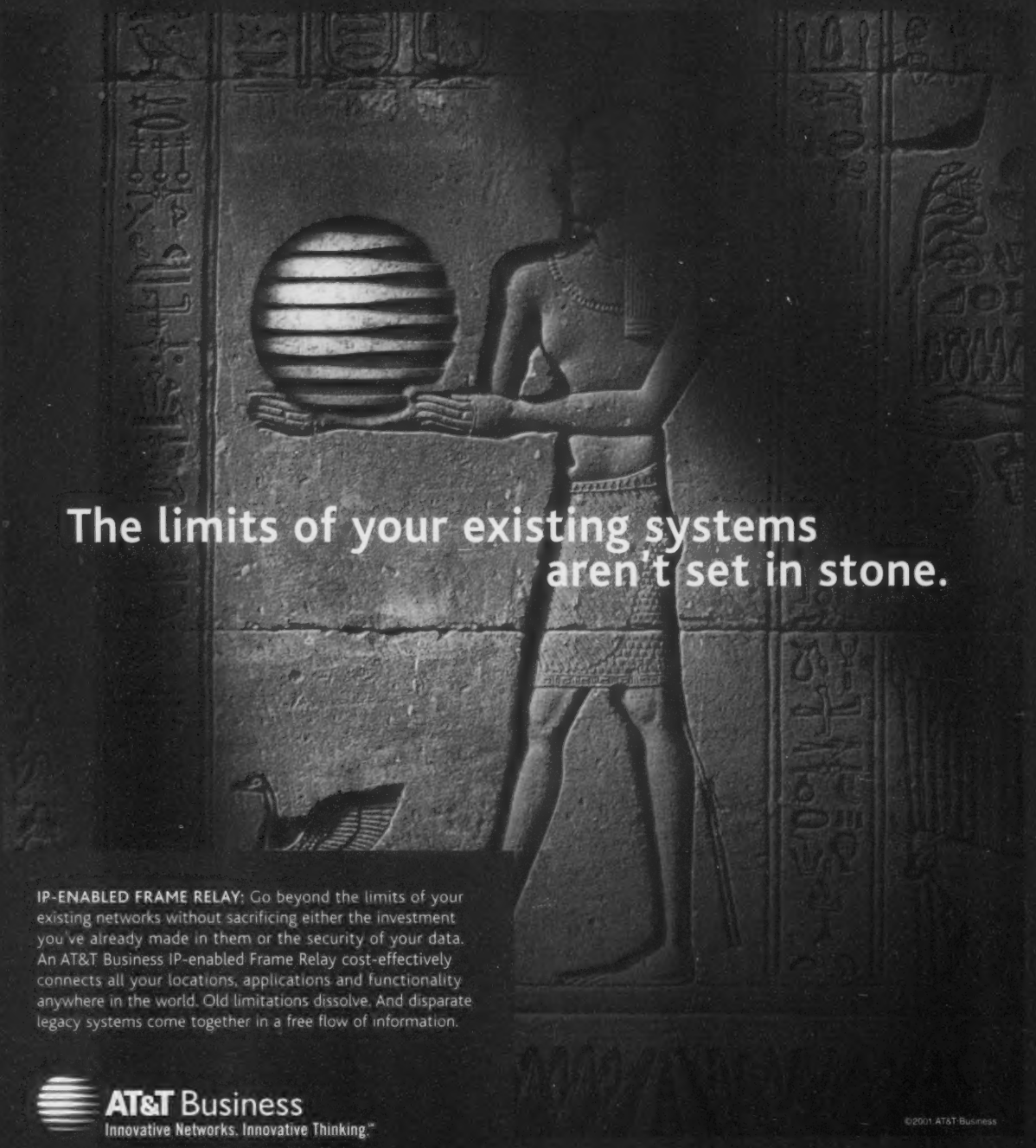
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TECHNOLOGY

SUN 'MIDFRAMES'

Sun is getting ready to introduce a series of midrange servers based on its 64-bit UltraSPARC III chip, hoping to give users significantly better performance than existing systems. The first servers in the line, which Sun refers to as midframes, will ship in September. ▸ 55

ENCRYPTION CONFLICT

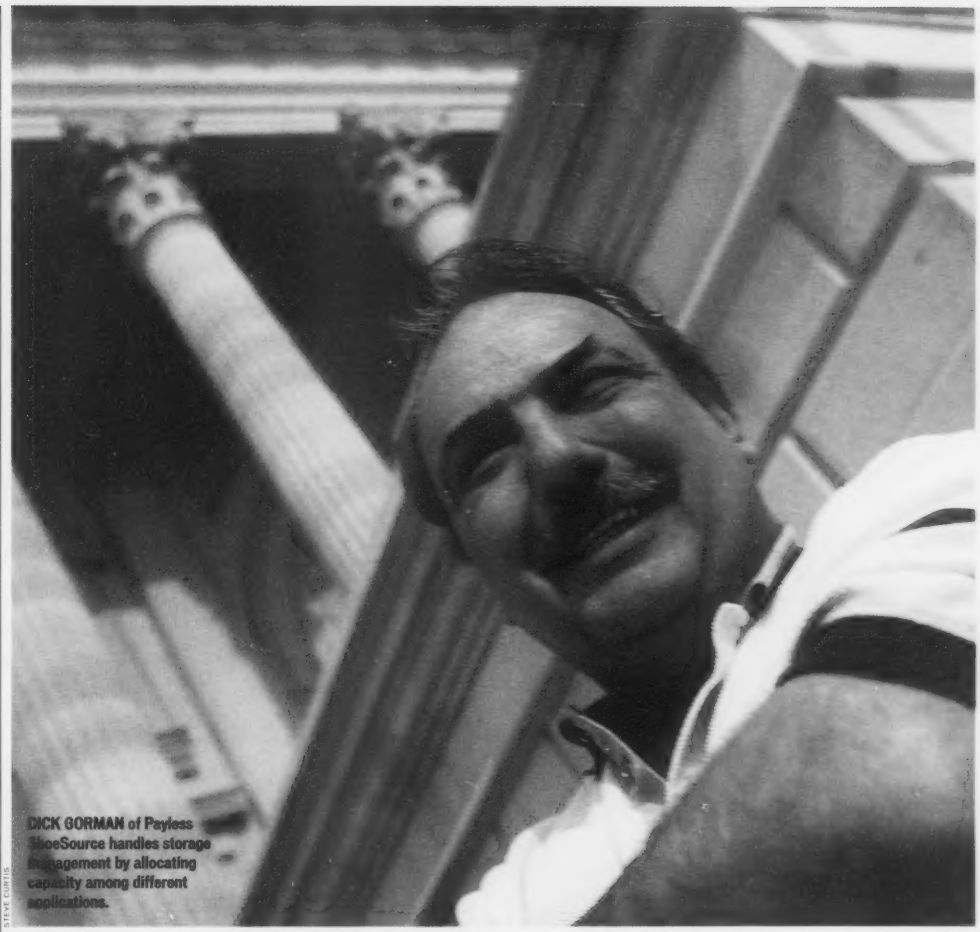
IBM and its partners are proposing a new encryption technology designed to make data stored on removable disks more secure. But some privacy and encryption activists complain that the new standard could force users to encrypt data on their hard drives that they would rather leave in the open. ▸ 56

IS THIS A HACK?

An apparently malicious attack launches Vince Tuesday's team into action in this week's Security Manager's Journal. He traces the attack to a trusted business partner, but is it a hacker launching off the partner's site, or is it something more unexpected? ▸ 57

KEEPING UP

Moving a package from here to there isn't what you'd call high tech, unless you do it millions of times a day and have to be able to track every package. Our reporters followed packages from Europe through the systems of both FedEx and UPS and could barely keep up. ▸ 58



STEVE CURTIS

DICK GORMAN of Payless ShoeSource handles storage management by allocating capacity among different applications.

WHERE DID ALL THAT DATA GO?

AS BUSINESSES COLLECT MORE DATA, IT managers struggle to keep tabs on an ever-expanding crop of multiplatform, multivendor storage devices, ranging from mainframes to RAID arrays to storage-area networks. The problem is, available management tools just can't deal effectively with such diversity. One result: Some IT managers feel it's smarter just to buy more storage capacity . . . and that gets *really* expensive.

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Sun to Launch Midrange UltraSPARC Servers

BY JAIKUMAR VIJAYAN

Sun Microsystems Inc. this week will boost its midrange server lineup with new multiprocessor systems based on the company's 64-bit UltraSPARC III chip.

The systems, which Sun calls midframes, are expected to feature the 900-MHz copper-based UltraSPARC III chip, according to analysts.

The UltraSPARC III is the most advanced processor Sun has built thus far. The chip, which began appearing in systems late last year, contains 29 million transistors, supports 8MB of Error Checking and Correcting (ECC) protected external cache and comes with an integrated memory and system controller.

Sun announced the first systems based on the chip — an engineering workstation and a low-end server — in September, several months later than originally scheduled.

Improved Performance

The servers, which are slated to be launched Wednesday in New York, should give users significantly better performance in the midrange space than existing Sun systems, according to Tony Iams, an analyst at D.H. Brown Associates Inc., a consultancy in Port Chester, N.Y.

Sun's midrange servers currently range from the eight-processor Sun Enterprise 3500 to the 30-processor 6500.

A lot will depend on how Sun decides to price the new systems in this space and how well Sun's existing application and database software systems have been tuned to take advantage of UltraSPARC III technology, Iams said.

"They have been incredibly successful over the past few years. This is going to make them even more competitive," he added.

Burlington Coat Factory Warehouse Corp. has just retired some of its older Sun servers and is looking at UltraSPARC III-based systems as possible replacements, said Mike Hoskins, a systems supervisor at the Burlington, N.J.-based company.

"If we can get the horsepower we need in a smaller box with smaller power consumption and less heat, I'll definitely take them," he said.

Users migrating to the new servers will first have to upgrade to Solaris 8, which is the only version of Sun's Unix operating system that runs on UltraSPARC III chips.

AT A GLANCE

UltraSPARC III

Sun's 900-MHz copper-based chip features:

- 64-bit technology
- 29 million transistors
- An embedded memory controller and 9.6GB/sec. address bus for scalability
- 8MB ECC external cache
- An error isolation and correction Uptime Bus for high system reliability

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IBM, Intel Push for Encryption Standard

BY LUCAS MEARIAN

IBM is backing a standards proposal that would allow generic functions to be programmed into removable media such as DVDs, flash memory and Zip drives that, among other things, could limit what a user copies to or from his computer.

IBM had previously proposed the controversial Copy Protection for Recordable Media (CPRM) standard to the T13 committee of the Washington-based National Committee for Information Technology Standards, which oversees Advanced Technology Attachment (ATA) interfaces. Such interfaces are used by a computer's motherboard to communicate with its disk storage devices.

But IBM said it pulled its backing of CPRM in favor of a "generic functionality" proposal submitted by Curtis Stevens, a technical editor at Phoenix Technologies Ltd. in San Jose, at the T13 group's meeting late last month.

IBM — along with Intel Corp., Matsushita Electronic Components Co. and Toshiba Corp. — formed a consortium called 4C Entity LLC in Morgan, Calif., to push the T13 committee to adopt first the CPRM and now Stevens' code into its ATA standard.

The Web site of the T13 committee contains many e-mails criticizing CPRM as a threat to civil liberties because it would allow an original equipment manufacturer to control what computers can copy or read. Some of those same critics are charging that the new "generic" proposal is nothing but a red herring that would still allow third parties to control computer copy functionality.

Bruce Schneier, founder and chief technology officer of Counterpane Internet Security Inc. in San Jose and a vocal critic of copyright protection standards, said that while the new standard proposed by Stevens is targeted at removable media, it easily migrates to fixed or hard disk drives.

"I think the whole idea of a third party dictating what goes on in your home or on your computer in your personal life is wrong," Schneier said. "They're making rules about what happens on your hard drive."

CPRM uses a serial number as a key to encrypt the content on a disk drive so that it can't be copied to another disk or through another drive unless it's code-compliant.

The generic functionality proposal would instead let an ATA device manufacturer use a fixed set of command codes to dictate how a drive functions. The new standard would also allow up to eight specific parameters to be set for a variety of purposes, from streaming media or read/write commands to drive or content protection.

The inability to share codes among various ATA vendors has been a problem in the past. The new standard uses a Global Unique Identifier created by the vendor to disclose the command codes.

IBM insists that the technologies are intended only for copyright protection of removable media, not hard disks. The new proposal, IBM said, is optional and must be activated by the copyright owner.

John Gilmore, co-founder of the Electronic Frontier Foundation (EFF), a nonprofit citizens rights organization in San Francisco, said if the T13 group's 14 members approve the standard, it will eventually be used in removable media and all disk drives.

Results of the vote are due April 12.

Better Driving

- Generic functionality would allow **original equipment manufacturers – to program up to eight commands into a disk drive,** such as a privacy command or audio/video streaming into a disk drive device.
- The proposal allows for a **large number of functions to be programmed into a drive,** and it gives a vendor (or creator) the ability to share the same eight commands for all of those capabilities.

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Anatomy of an Attack: A Race Against Time

Vince tries to stave off scripted log-on attempts before he's forced to pull plug on a critical business system

BY VINCE TUESDAY

IT BEGINS with a shiver, a vibration almost too faint to be sensed. My attention is pulled from the meeting I'm in by the security problem I know is occurring on our live network.

Do I have a strange power derived from the bite of a radioactive spider that allows me to sense the problem? No, I'm lucky enough to be one of the many security professionals bound by the electronic leash of a pager. I'm not always on the front line, but today, it's my turn to possibly have sleep and social life interrupted by the vibrating black box. At least this time, it pulls me from a tedious meeting.

SECURITY MANAGER'S JOURNAL

The pager is linked to our security monitoring and alerting system and provides a summary of any incident detected. It has plenty to say today.

A glance at the messages indicates their urgency, so I make my excuses to leave the meeting and run back to my desk, warming up my team by cell phone as I go. En route, I receive yet another cluster of pages indicating that this isn't just an isolated event but something more worrisome.

In our office, the team has pulled up the full data flowing from our network and host intrusion-detection system. It doesn't look good. We see a cascade of thousands of attempts to log in to a critical host, using a variety of well-known accounts, such as root, guest, user and system. The speed of the attempts shows this is no spotty teenager in a bedroom typing attempt after attempt. This is a scripted attack.

The Source

The attack comes from a trusted business partner, and the server being attacked is deployed on its remote site. It isn't subtle, but few of the organizations I've worked with would detect it.

We see many attacks from the Internet, but we expect these and are well prepared to respond to them. This kind of attack brings with it the concern that our business partner has been compromised. Could it have a malicious employee? Has a hacker breached its network?

The server under attack is critical because it processes many financial transactions. Although none of the current log-in attempts will work, they are traditionally the precursor to more involved and skillful probes. Should the attacker move on to a more sophisticated attack, we'll be forced to choose between pulling the plug and suffering downtime and lost business, or letting the attack continue, exposing the company to higher risk. We must quickly find the source of the probe.

As we print the logs to retain as evidence, we trace the attack to the firm from which it's originating. The company is a major financial institution that should know better than to allow its networks to be used for such an attack.

In financial services, reputation is more important than reality — our business is grounded in trust. Companies with the best protection, which detect and stop attacks and then report them to show how secure they are, can get crucified in the press and by customers for having a security problem.

It's seven minutes into the incident, and now the real fun begins: We must get the technical situation understood and resolved by the people who run the remote network. All our business partners provide contact information, which is normally used to resolve financial problems. We're happy to use this information as a starting point. Unfortunately, it's out-of-date, and our first few calls are to an office no longer leased by the company in question.

We know this is going to take longer than we had hoped, so we send word to collect our senior management so we can brief them on the incident. We're lucky that our management team members are willing to be called early, rather than after everything is over. They accept that sometimes there will be false alarms, but even so, I hesitate to issue the request. Nobody wants to be the boy who cried wolf.

The Culprit

Suddenly, things start to look better. We've found a reception number for the company, albeit for an American office. The curious verbal dance begins: I try to convince the receptionist and various IT people that something serious is happening, requiring immediate action, without raising their fears that they are being socially engineered into helping a hacker.

(Security managers note: If you run a security team, why not provide your receptionists with simple instructions on how to deal with strange requests about security incidents that might be originating from your network?)

Time is still pressing, and the log-in attempts continue thick and fast. Looking at the list of attempts, there are a few accounts on the list that aren't standard but do ring a bell. I've seen this list before. I try to remember where, as I bounce from IT team to IT team, ending up with one on the right continent.

I do my best to sound relaxed and confident as I explain for the fifth time that we're seeing unusual behavior from a machine on the partner's network: Could I get assistance in resolving the issue? Without answering me, the person at the other end leans away from the phone and shouts across the office, "Are we scanning Europe or the Far East?"

I imagine this is the feeling hackers get when they manage to get into a well-protected system. This rush of relief and adrenaline makes up for the false alarms at 3 a.m., night after night. I also realize where I've seen that list of accounts before: the brute-force list in Atlanta-based Internet Security Systems Inc.'s Internet Scanner product.

Within seconds, the attempts stop and a rather embarrassed audit team at the remote site tries to explain why its test of a DMZ (see glossary) for third-party connections included a sloppy attempt to hack our machine. A swift dual investigation uncovers the fact that they are using Network Address Translation devices that make some of our systems appear to be part of their internal network. So, despite the rather obvious "go away" banners on all our systems, they included these addresses within the range to be scanned. (I've never been convinced that these long-winded legal blurbs reduce risk, but I suppose they can't hurt.)

Everyone relaxes as we receive confirmation from the remote organization that this is an authorized audit of their servers, and I brief my management. Twenty-seven minutes after my pocket shook with the first warning that an incident was occurring, I'm having my hand shaken by our manager. He's happy we've proved to a key customer that we have adequate security, and he has a great tale to poke fun at that company's CIO when they next play golf.

If only every incident had such a happy ending. ◗

THIS WEEK'S GLOSSARY

DMZ: The "demilitarized zone" is a segment of the corporate network outside of the firewall that separates public-facing machines such as Web servers, Simple Mail Transfer Protocol servers and file transfer protocol servers from the private corporate LAN. Any connections between these servers and the internal LAN must pass through the firewall. This protects the networks inside the firewall from being attacked from the public servers if they are ever compromised.

NAT: Network Address Translation is a service that lets you simplify an internal network by making external machines appear to have internal IP addresses. By translating an external IP address to an internal one, there's no need to reconfigure the external machines.

LINKS:

www.infowar.com/hacker/hack_092297a.html-ssi: We never send critical details to pagers or discuss them on mobile communication devices. Maybe we're paranoid, but we never want our work to make an incident worse. Find out how a U.S. Secret Service pager system was compromised in this story posted at Infowar.com Ltd.'s InfoSec and InfoWar Portal Web site.

www.dalantech.com/nat.shtml: For more on NAT, see "Network Address Translation for Beginners" on the Da LAN Tech Web site. This site, dedicated to network news and reviews, also includes a section on security issues.

www.iss.net: Internet Security Systems, maker of Internet Scanner intrusion-detection software.

■ This week's journal is written by a real security manager, "Vince Tuesday," whose name and employer have been disguised for obvious reasons. It's posted weekly at *www.computerworld.com* to help you and our security manager better solve security problems. Contact him at vince.tuesday@hushmail.com or head to the Security Manager's Journal interactive forum.

Follow That

While our reporters struggle to keep up with a fast-moving package, data about the package travels through FedEx's trans-Atlantic WAN, wireless LANs, mobile computers and countless bar code scanners.

By Bob Brewin and Linda Rosencrance

Paris, the morning of Jan. 17

THE SHIPPING DEPARTMENT HERE at Cristal Vendome — one of the world's largest sellers of Lalique SA crystal — calls in a pickup order to a FedEx Corp. call center. This sets in motion a 24-hour flow of information that will allow the crystal shop to track its packages every step of the way on a transcontinental journey.

The simple key to success is that the bar code of every FedEx package is scanned, on average, a mind-numbing 23 times. That's why a package traveling more than 4,000 miles can be monitored through FedEx's Web site — and why a correctly addressed FedEx package almost never gets lost.

"Scanning is at the core of our systems," says Steve Streitmatter, managing director for system design and integration at FedEx. "It allows us to keep custodial control of a package." In fact, he says, "the information about the package is as important as the package itself."

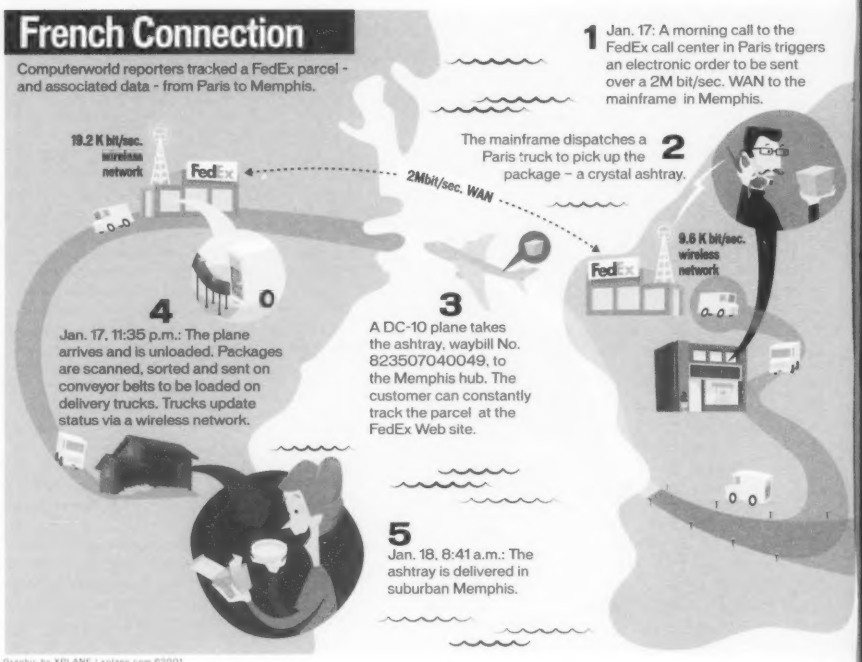
Besides allowing customers to monitor the shipment, the real-time data helps FedEx tightly manage its assets, including huge sorting facilities called hubs and a worldwide fleet of trucks and planes.

At the Paris call center, the pickup information is typed into a terminal that zaps the order over a 2M bit/sec. wide-area network (WAN) across the Atlantic to the mainframe at FedEx headquarters in Memphis. The system determines that a courier from the FedEx station near the Stade de France soccer stadium should make the pickup.

At the station, dispatchers assign the pickup to driver Philippe Loichot, who gets his instructions over a wireless data network. He receives the pickup order on his truck's Digitally Aided Dispatch System (DADS), an onboard computer mounted to the right of the steering wheel.

At about 3 p.m., Loichot pulls up outside the Cristal Vendome shop and scans the waybill on each package into the tracker. The handheld tracker is the key data-entry point: It has a bar code scanner to record the package identification number, which is matched with the destination that's typed on a small keyboard.

The load includes a shipment of a crystal ashtray, waybill No. 823507040049, which *Computerworld* will follow through its delivery in suburban Memphis today.



The Tracker Database Knows All

The tracker produces a detailed routing label that Loichot zips out on his portable printer. The specially designed bar-code label contains a huge amount of information, starting with the shipment's destination, the type of service delivery (such as "Priority Overnight" or "Standard Overnight") and the delivery commitment time.

The tracker's database gets updated with the latest information from the FedEx delivery network whenever the driver places it in a recharging rack at the station, which has a LAN/WAN connection to Memphis-based systems.

For example, the tracker database knows which conveyor belt the ashtray package needs to hit in order to get in the container destined for the FedEx hub at Charles de Gaulle Airport. It even knows whether there's a bad storm at the ultimate destination in the U.S., says Jimmy Burke, vice president for IT at FedEx.

Back at the truck, Loichot "shoes" the tracker in the DADS truck-mounted computer, which collects the basic information on each package he just picked up. The DADS terminal sends that information over the wireless packet network back to the LAN at the Stade de France station, which then sends it over the WAN to Cosmos, the FedEx package-tracking system in Memphis.

Within seconds, the sender can check this pickup record on the FedEx Web site. Cosmos monitors the movement of all shipments in the FedEx network — more than 3 million each business day.

When Loichot returns to the station, he unloads the package from his truck onto a sorting belt and then takes the customs paperwork into the office, where one of the few manual data-entry operations in the entire process occurs. One group of clerks keys in customs information from the waybill and shipping documents, while another group faxes the documents to Memphis.

The system ensures that customs agents and bro-

Package!

kers in Memphis have information on all inbound shipments that are subject to import duties "hours before the plane gets here," Burke says.

The company plans to replace the manual operation with a high-resolution imaging system within three to four months, says Grahame Ritchie, FedEx's regional IT director in Europe.

The ashtray package is quickly routed into an outbound container called an "igloo" for the de Gaulle Airport. The fiberglass igloos have sloped sides that fit into the curves inside the aircraft.

Slapped on the container is what FedEx calls a consolidation scan, or "con scan." Ritchie describes a con scan as "the mother of a family of air waybill numbers" for all of the packages in that container.

Now the container is loaded onto a truck headed to de Gaulle Airport, where it's off-loaded onto a maze of conveyor belts. Overhead scanners read the bar codes as the containers snake along.

A series of metal diverters nudge the ashtray's container to the specific conveyor belt leading to another igloo that's headed for Memphis. A FedEx DC-10 plane leaves in less than two hours.

The Purple Glow of Laser Scanners

As the crystal ashtray makes its journey through the de Gaulle hub, workers use an innovative system that FedEx developed in-house called "purple light." (Why? Because the laser scanners bathe the area in purple light.) Basically, it helps workers sort the thousands of small packages and letters that flow through the facility nightly.

Each purple light station has computerized scales, a powerful overhead scanner and 30 bins with plastic bags. A voice output system — here it's in French, of course — tells workers which bin to put a package in. If a worker puts the package in the wrong bin, the voice output system sounds a warning.

Burke says this system has already paid off for FedEx by cutting the number of workers required to sort the small packages. It also "cuts training time to about two minutes," he says. "It won't let you put the package in the wrong bag."

Moreover, the purple light station increases revenue. Placing the packages on computerized scales allows FedEx "to catch a package if it's overweight and correct the billing," Burke says.

The mini-LAN in each purple light system constantly updates the Cosmos mainframe each time a package is placed in a bag. Once the bag is filled, a con scan tag is attached, and the bag is routed on a conveyor belt to yet another igloo that's headed for Memphis.

The container is weighed, with the data automatically fed into a weight and balance system, which determines the correct placement of the container in the aircraft. Then it's placed on a dolly for transport to the loading ramp. The container is loaded on the DC-10 and, five minutes later, the pilot tells observers, "You have about three minutes to get off the plane. We leave on time."

Memphis, 11 p.m., Jan. 17

At the FedEx world hub in Memphis, employees hustle to their stations as the first aircraft lights pierce the night sky. Flight No. 3 from Paris — containing cargo including the crystal ashtray — is due to arrive at 11:35 p.m.

The transport hub is beginning to hum with choreographed activity. Tug cars pulling empty dollies weave among landing aircraft. Other runway vehicles perform evasive maneuvers in an attempt to steer clear of the tugs.

"It's really controlled chaos," says Brian Proffitt, manager of international clearance support. As many as 160 planes land nightly, and teams of FedEx workers unload each within 20 minutes.

But before a plane lands, manifest information is uploaded into the critical Inbound Control System. In addition to sending data into the tracking system, the Inbound Control System feeds information into a performance database.

The performance database provides FedEx management with information such as whether the plane took longer than usual to unload, ran into weather delays or had mechanical problems — such as the balky container lid that briefly delayed the unloading of the ashtray's container.

As the packages come out of the igloo containers, they're scanned into a system that determines whether an imported package has been cleared through customs or will be selected for a routine customs inspection.

Once the ashtray makes it through customs, a FedEx worker puts the package on a conveyor belt — part of a 200-mile labyrinth of belts traversing the hub — headed to the primary sort area. In the primary sort area, packages pass through scanners that capture data such as the destination ZIP code to guide the package through the secondary sort area.

Programmed with the data captured at the primary sort, metal diverters strategically placed along a belt automatically snap forward to move each package to one of the 22 secondary channels for various geographic destinations.

"Think of a big funnel on top of the United States, and we've taken the United States and divided it into 22 sections," says FedEx spokeswoman Sally Davenport. "So when we feed all those packages in based on the ZIP code, which is the first level of sort, they are going to one of those 22 sections."

There's even a system called the Jam Advance Warning System (JAWS), which uses electronic sensors to monitor the flow of packages through the conveyor belts. If JAWS detects sluggishness, it takes corrective action to keep the packages moving.

The Memphis hub has 2.4 million sq. ft. of floor space and processes an average of 1.5 million ship-

FedEx driver Philippe Loichot picks up the crystal ashtray at the tony Cristal Vendome shop in Paris.

Loichot uses the truck's onboard computer to communicate with the FedEx global tracking network.

The package with the ashtray starts what will become a two-mile journey on various FedEx conveyor belts.

Once inside the hold of the DC-10, the ashtray is headed for the FedEx world hub in Memphis, 4,000 miles away.

ALL PHOTOS BY MARTA MASCIMENTO/REA/CORBIS SABA

Follow That Package!

ments per night — at a rate of 1,000 bar code scans per minute. Each scan reads approximately 60 bytes of data, which adds up pretty fast: about 900MB every 2.5 hours. All that data travels on production LANs that connect infrared ports, wireless scanners and hard-wired scanners.

At various intervals throughout the night, the data is dumped into the mainframe system, which makes it possible for customers to find out which igloos their packages are in at the Memphis hub. The data is also downloaded into FedEx's internal system, Hub2k, to provide real-time information to various internal departments.

From the secondary sort, the package rides the appropriate run-out belt, gets scanned again and is placed in a new igloo — with a new consolidation tag — which is loaded onto a truck bound for a FedEx satellite facility.

MOREONLINE
Follow our reporter as he valiantly tries to keep up with FedEx driver Philippe Loichot.
www.computerworld.com/package

At the satellite facility, the package is unloaded and scanned with a wireless scanning gun — at some facilities, workers use radio-frequency ring scanners with arm-mounted computers. This scan shows that the package arrived at the destination FedEx station.

And the data from the satellite station is sent over a wireless LAN to the Cosmos system, so shippers can continue to receive the most up-to-date tracking information, Streitmatter says.

Drivers of the delivery vehicles start to pull the packages destined for their routes off the conveyor belt. But before they put a package into their trucks, they perform a "van scan" to feed the package data into the handheld tracker.

Just before they leave the station, drivers point the tracker up at infrared ports above the belts, beaming all the data on the packages they just scanned into a LAN connected to the mainframe.

Finally, at 8:41 a.m. on Jan. 18, driver Wendell Bonner delivers the Lalique crystal ashtray to FedEx spokeswoman Sally Davenport in nearby Cordova, Tenn. It was a fast-paced 4,348-mile journey — including 4,300 miles in the air and two miles on conveyor belts — for a package that was in and out of enough igloos to outfit a small Alaskan village. ◗

UPS: Tightly Linked To Its Customers

At the M&S EDV Service computer repair shop in Niedenberg, Germany, a village 45 minutes south of Frankfurt, managing time-sensitive shipments is so important that the shop's systems are tied directly into the global network of Atlanta-based United Parcel Service Inc., says Joseph Reger, director for e-business at M&S.

So when M&S clerk Nadine Rutner processes an order for a computer monitor, it kicks off an automated fulfillment and shipping process that relies on a direct link between the company's IBM AS/400 and the UPS data center in Mahwah, N.J.

A customer, in Louisville, Ky., uses the M&S Web page to order the rush shipment of a monitor to replace a defective one. Rutner locates the correct replacement monitor and then types the shipment details into her secure "My UPS" Web page, hosted in Mahwah.

This simple ASCII request joins a sea of data flowing two ways across the Atlantic on a 6M bit/sec. WAN, says Steffen Muller, the UPS e-commerce manager in Germany.

In seconds, the Mahwah mainframes assign a tracking number that M&S and *Computerworld* will use to track the package during the next 24 hours to its final destination.

Rutner uses the UPS browser to print out the shipping label, complete with the bar codes containing routing and delivery information essential to getting the monitor through the UPS hubs in Frankfurt and Cologne.

The Mahwah computer center then forwards pickup information over the WAN to the Frankfurt hub, which sends it over an x.25 wireless data network to driver Michael Oster. Oster backs his familiar brown UPS truck up to the M&S loading dock in the early afternoon.

When Oster arrives at the sprawling UPS hub in Frankfurt, the monitor moves quickly through the facility because next-day shipments are processed before other parcels.

Scanners and digital cameras read the label printed out by Rutner and query the database in Mahwah.In about 7 seconds, the Mahwah data center answers back, "Send this package to Cologne," says Alex Bosch, the UPS export supervisor in Frankfurt.

The package is shunted onto the correct belt, placed in a bag with a master tag bar code (which serves as the data index to all the shipments in the bag) and quickly loaded on a truck bound for Cologne – with the time posted on the Web for M&S to see back in Germany.

After a Lear jet trip to Cologne and a stop in Stansted, England, the monitor is loaded onto a B-767 freighter headed to Louisville.

Back in the U.S.A

On the ground in Louisville, ramp supervisors use wireless LAN scanners – linked to the air hub control system – to manage the unloading of the plane.

The sorting crew uses overhead scanners to feed information on each incoming package over a LAN to a local workstation, which then relays the data to the Mahwah mainframe.

The Louisville hub currently sorts approximately 215,000 packages per hour. UPS has started construction of a new $1.1 billion air hub there that will boost throughput to 300,000 to 500,000 packages per hour.

The monitor is taken to a satellite UPS facility, where it's scanned again with the wearable scanners and loaded onto the appropriate delivery van. The van driver uses a third-generation, custom-developed handheld computer called a delivery information acquisition device (DIAD) to collect and transmit real-time delivery information.

The DIAD III has 6.5MB of memory and an internal radio that allows for two-way, text-based communication between the driver and the dispatcher – a light on the corner of the DIAD alerts the driver when he has a message. And, as anyone who has ever received a UPS package knows, it captures signatures electronically.

What isn't so well known is that the device can transmit data to the UPS Mahwah data center three different ways: via an internal packet data radio, a cellular modem in the truck and an internal acoustical coupler for an ordinary telephone line.

"This triple communications redundancy ensures real-time tracking in every environment," says UPS spokeswoman Joan Schnorbus.

The driver had been given incorrect address information and twice made unsuccessful delivery attempts, but the third attempt was successful. The monitor, which had been picked up in Germany at 1:17 p.m. on Jan. 22, was delivered in Louisville at 9:33 a.m. on Jan. 23. The digital signature was automatically transmitted back to Rutner at M&S in Niedenberg.

– Bob Brewin and Linda Rosencrance

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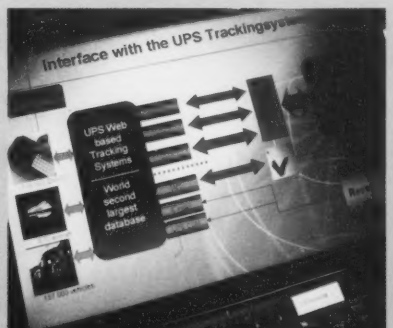
A UPS truck backs up to the computer-repair shop in Germany to pick up the computer monitor headed to Louisville, Ky.



The UPS package-tracking system – tightly integrated with the Web – ranges from mainframes in Mahwah, N.J., to handheld computers for couriers.

An overhead bar code scanner at the airport keeps track of the computer monitor so its progress can be monitored by customers on the Web.

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Mix&
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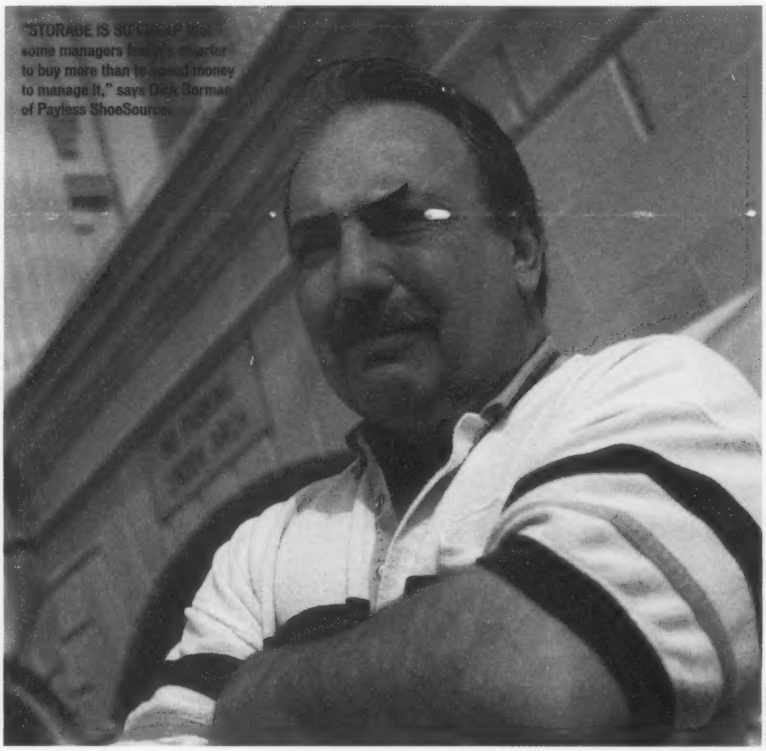
Centralized management for
It's a great idea, but the tools are



AS DEMAND FOR storage at many companies doubles or grows even more each year, IT managers may find it easier to add more storage than to better manage the amount they already have. But ineffective management means they buy more storage than they need, driving up administrative costs and increasing storage problems.

"Storage is so cheap that some managers feel it's smarter to buy more than to spend money to manage it," says Dick Gorman, senior storage administrator at Payless ShoeSource Inc. in Topeka, Kan. Although this strategy may work for the short term, "people are always demanding more storage; there's no end to it," he says. Sooner or later, every organization has to apply some management controls.

And adding capacity isn't cheap. The cost per gigabyte may be low, but the total rises as you get to terabytes. The storage tab alone will eat up as much as 80% of all IT spending this year, according to Stamford, Conn.-based research firm Meta Group Inc.

Defining the Problem

Managing storage capacity isn't simple. Systems typically include mainframe devices, JBOD (just a bunch of disks) setups, server-attached storage, network-attached storage (NAS) and storage-area networks (SAN). "There is no grand framework. The management tools are all different, unique to each device," notes Scott Robinson, chief technology officer at Minneapolis-based Datalink Corp.

"Whether it is even possible to manage heterogeneous storage depends on your definition of *heterogeneous*," says Dale Miller, a vice president at Trilliant Group, a Cincinnati-based storage consultant. The more disparate the platforms, storage systems and devices, the harder they are to manage, he says.

For example, there are tools from vendors such as Veritas Software Corp. in Mountain View, Calif., to automate server storage backup over networks. But administrators may want to perform many other management functions (see list at right). "You're looking at a lot of different disciplines," notes Miller. Each typically uses its own tool, often a different version for each platform or storage device.

Further complicating the management problem are legacy devices. The older the storage devices or platforms, the harder it is to find tools to manage them. "With old storage devices, you have to concern yourself with different versions of the operating system or the database," Miller says.

SANs Add Complexity

Proponents of SANs argue that they are ideal for consolidating and managing storage. SANs put storage on a separate network, where it can be centrally managed and accessed by multiple servers. By themselves, though, SANs don't solve the problem of heterogeneous storage management — not yet. For now, Robinson says, only a few tools — High Ground from Sun Microsystems Inc., Veritas' SANpoint Control and tools from Compaq Computer Corp. — promise some level of heterogeneous SAN management, but they're limited in the degree of heterogeneity they support. Most are still vendor-specific, and none has all the needed functionality, including storage virtualization. As a result, "SANs give you a framework for storage management, but the SAN doesn't make storage management inherently easy," he says. To the

Storage Management Issues

- **Backup management:** Overseeing regular operational backup procedures
- **Problem management:** Identifying and troubleshooting storage problems
- **Change management:** Configuring storage devices and tracking configuration changes
- **Dynamic allocation:** Changing and reconfiguring storage volumes on the fly
- **Capacity planning:** Analyzing storage usage trends to predict future needs
- **Storage performance tuning:** Tweaking application, server, network and device parameters to improve storage performance
- **Data retention and archiving:** Where infrequently needed data is stored for regulatory or historical purposes

contrary, SANs add management complexity because you have to manage the SAN with its disk arrays, switches and host bus adapters from multiple vendors, as well as the Fibre Channel network, which introduces a new set of management headaches.

To manage heterogeneous storage beyond SANs, Miller says, you're pretty much limited to tools from Houston-based BMC Software Inc., Islandia, N.Y.-based Computer Associates International Inc. and Austin, Texas-based IBM subsidiary Tivoli Systems Inc. But even these are far from ideal, he says. At best, they show what's happening; they can't drill down to address individual problems. For that, you need a tool specific to your gear.

Cinergy Corp., a Cincinnati-based energy utility, uses BMC's Resolve to manage a Hitachi HDS 7700E RAID array and an Amdahl Spectris Gold RAID array that hold 1.7TB of data for Cinergy's Amdahl and Hitachi mainframe systems. Each array is attached to its mainframe via IBM's Escon, a high-speed direct mainframe communication channel.

Cinergy storage administrators need to place data sets into specific pools and allocate the pools to different storage devices based on performance and growth considerations, says Andy Schoentrup, technology engineer at the company. The administrators use IBM's System-Managed Storage tool to allocate the data, which they then monitor using Resolve. For capacity planning, the administrators use Resolve to save historic data and perform trending analysis. "The BMC software lets us do everything we wanted except specify the actual [disk] allocation," he says.

However, Cinergy administrators can establish categories and track usage trends for each category of storage and storage pool. They can monitor capacity and constraints, set thresholds and generate alerts. "The management software lets us be proactive," says Schoentrup. For example, if an administrator receives an alert that one storage pool is reaching its capacity threshold, "the administrator might dump old data or add capacity," he explains. The administrators can also define actions for Resolve to take automatically in response to specific conditions.

In general, Cinergy's administrators treat all the storage as one large pool, except when they're optimizing performance for a particularly hot data set, which they then selectively place. For example, several major production applications generate and store large volumes of DB2 data. Using Resolve, storage administrators organize these volumes — which may cross both mainframes — under one name, and monitor the data's performance. "We do historical trending, performance analysis and capacity projections specifically on that data," Schoentrup explains.

Before implementing Resolve last October, the administrators could perform the same sort of monitoring and analysis manually, but it took longer. "We would spend anywhere from two to five days just to gather the data. Now, I click a button and I have the information in five minutes," says Schoentrup. This is particularly handy when a manager announces a new initiative and needs to know how much storage something uses now vs. six months ago.

Today, Cinergy's storage management focuses on mainframe storage, leaving out hundreds of Unix and Windows NT servers, each with its own storage. "We plan to incorporate the other servers, set up a tiered structure and manage it all through BMC," Schoentrup says. "That's where we want to go in the long term." The company is also considering implementing a SAN or NAS under BMC's management. "We want one place to look, one central point of entry for all storage," he says.

Steps to Manage Heterogeneous Storage

- **Establish** a storage architecture.
- **Standardize** to reduce heterogeneity as much as possible.
- **Consolidate** servers.
- **Consolidate** storage on a SAN.
- **Define** your storage management needs.
- **Implement** storage management tools.
- **Consider** an enterprise storage management framework.

Everyone Into the Pool

Payless ShoeSource turned to CA's CA-Vantage to manage its mainframe, Windows NT and AIX server storage, encompassing five different Symmetrix storage arrays from EMC Corp. in Hopkinton, Mass. From a single workstation console, Gorman can perform a variety of storage management functions for Payless' systems. These include utilization trend analysis, usage forecasting and monitoring of the tape backup system. Payless also uses Tivoli Storage Manager to back up its NT and AIX servers and storage array to the mainframe, which transfers it to backup tapes. Gorman, however, views reports on Tivoli backup activity through CA-Vantage.

Storage at Payless amounts to 6TB today. Gorman administers it all, which is possible only because of CA-Vantage, he says. "If I didn't have CA-Vantage, I'd have to go out to check on the storage every day, and I don't have that kind of time," he says. The company would have to hire at least one more storage administrator, maybe more, he says.

Storage management also saves Payless money by enabling Gorman to easily reallocate capacity among different applications. This allows the company to delay additional storage purchases. Payless is considering purchasing a SAN, which Gorman believes would make the allocation of storage capacity even easier.

The ultimate goal of enterprisewide heterogeneous storage is to manage all the diverse, distributed storage in the enterprise as a single virtual storage pool. "It would be nice to see the entire storage farm and just point and click to add, delete or move storage," Gorman notes. But it will be some time before storage management tools let you create and manage truly heterogeneous storage pools. This will require storage vendors to give up some of what they believe differentiates their products and adopt more standards, he says. And that isn't happening fast. ◗

Radding is a freelance writer in Newton, Mass. You can reach him at radding@mediaone.net.

Match

rage

mixed storage resources:

n't up to the job. By Alan Radding

Active Server Pages

BY LEE COPELAND GLADWIN

WHEN YOU surf the Internet and peruse a Web page with interactive content, chances are that the page was developed using Microsoft Corp.'s Active Server Pages (ASP) technology or Sun Microsystems Inc.'s JavaServer Pages (JSP) technology.

For example, a Web page containing a weather outlook typically offers dynamic information based on specific requests from the Web browser. The graphical presentation of the page won't change, regardless of whether the user requests a five-day forecast for Denver or Seattle, but accurate weather information — which usually gets pulled from a database — does.

ASPs and JSPs are two of the most popular technologies for generating that type of dynamic content for a Web page. The primary difference between the two development methods is that ASPs generally interact with a back-end environment built with Microsoft technologies, while JSPs live in a Java-based environment.

Server-side Scripting

Microsoft introduced ASPs, along with its Internet Information Server 3.0, to allow developers to create Web pages that can interact with databases and other applications.

An ASP is a server-side scripting environment used to create dynamic, interactive Web pages. It contains HTML, which defines the page layout, fonts and graphic elements, and embedded programming code that's written in a Microsoft scripting language.

Most ASPs are written using Visual Basic Script or JavaScript, but scripting engines for languages such as Perl and Python are available through third-party vendors.

When a Web browser makes a request, the embedded script runs and pulls up a file with an .asp extension from the Web server, which returns the new results to the browser.

As you might expect, JavaServer Pages are Sun's Java equivalent of Microsoft's ASPs. JSP technology is built on top of servlets, a portable Java program that provides server-side processing.

Just like ASPs, JSPs contain HTML for page layout and use embedded Java programming code that allows dynamic content to be displayed on a Web page.

The JSP gets compiled into servlet byte code to process the Web browser request to a database or another application.

JSP developers use static HTML, scriptlets (snippets of Java code) and tags to create the page that loads in the Web browser. The tags and scriptlets encapsulate the business logic on the HTML page.

When the browser makes a request, the embedded code runs in a servlet engine, which interprets the JSP tags and scriptlets and sends the results back as an HTML page to the browser.

ASPs vs. JSPs

"JSPs were created later, and they're a knockoff of ASPs," says Yefim Natis, an analyst at Stamford-Conn.-based Gartner Group Inc., noting that the introduction of both ASPs and JSPs aided in reducing the time and costs required to maintain and develop Web-based applications.

JSPs and ASPs allow database content, or data from other applications, to be pulled from those resources and displayed on the Web page by a browser. Both technologies emerged to contend with static, predefined Web pages developed using HTML.

By separating the user interface (the appearance of the page) from the content-generation functionality, developers have an easier task of changing both the page layout and the dynamic content.

Labor Saver

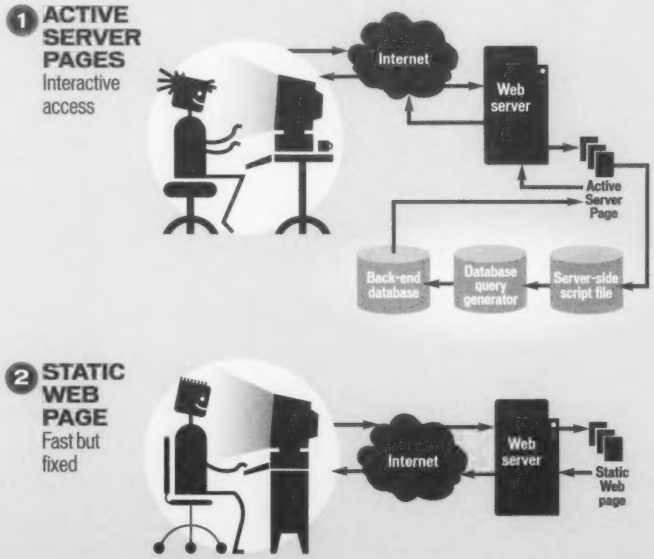
"In the old days, if you wanted to make changes to an HTML page, like to a price in a catalog, you would have to physically change the price on every single item," says Troy Denkinger, a software engineer at FullAudio Inc., an online music service in Chicago. "When using ASPs or JSPs, the information gets populated on the page dynamically, and all you have to change is the price data in the database. It allows you to take a lot of the labor out of producing online information."

Before the advent of ASP and JSP technologies, developers had to write Common Gateway Interface (CGI) scripts, using languages such as Perl, C or C++ to process user input from the Web browser to the Web server. But CGI scripts present scalability problems if the site receives a large number of concurrent requests.

"Cosmetically, there is no difference between ASPs and JSPs to the user . . . and in terms of functionality, there is really no difference as far as the consumer is concerned," Denkinger adds. ◗

DEFINITION

Both Microsoft's **Active Server Pages (ASP)** and Sun's JavaServer Pages (JSP) are types of scripted Web pages that can display dynamic content requested by a Web browser. Both technologies use HTML for determining page layout. For generating content and querying databases or other applications, ASPs rely on programs written in embedded Microsoft scripting languages, while JSPs use Java programs.



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Making Oracle Applications Easier

Start-up automates migration, integration

BY AMY HELEN JOHNSON

WHEN British Telecommunications PLC decided last year to upgrade to a newer version of Oracle Applications, Oracle Corp.'s suite of back-end business management software, the London-based communications company faced an expensive "wither and die" migration process for its data, says systems development accountant Chris Lacey.

That approach would create two diverging Oracle Applications implementations: one with several instances of the old version containing the historical data collected before the change, and another running on the new software version that combined invoice and ordering information from departments within the company's wireless division.

Then, at an Oracle user's conference last spring, Lacey came across Crystallize Inc. in Ann Arbor, Mich. The start-up's software automates the process of merging different implementations of Oracle Applications, changing the underlying database fields and restructuring financial systems.

What previously required custom scripts, a raft of consultants and a brute-force approach can be done in-house within a few months, claims Joshua Greenbaum, a principal at Enterprise Applications Consulting in Daly City, Calif. "Crystallize is trying to solve an age-old problem that has typically been solved the hard way," he says.

Using Crystallize's software, British Telecom was able to combine its multiple instances of Oracle Applications before its planned upgrade. The process took five months instead of the year or more that Lacey predicted, and he estimates the company will save as much as 1 million pounds because of the unified data stores. In addition, he says, historical data can migrate into the new software, allowing the company to provide better customer service because of that integrated database.

At the center of Crystallize's software is a patented rules engine developed by CEO and former Oracle consultant Helene Abrams. The rules describe patterns common to most implementations of Oracle Applications, she says.

The engine focuses on many areas, including undocumented Oracle processes, like the sequence of loading relational databases, and general database-merging techniques, including more than 27 methods of data mining. The software confirms each rule by examining live data, she says, and constantly updates the repository with each customer project.

DWIGHT CENDROWSKI

CEO HELENE ABRAMS: Crystallize's goal is to develop change-management products for other database-driven applications.

Crystallize Inc.

Location: 1410 Woodridge Ave., Ann Arbor, Mich. 48105

Telephone: (734) 668-8100

Web: www.crystallizes.com

The technology: Software tools for rapid integration and migration of Oracle Applications databases

Why it's worth watching: Automated processes can save time and produce more consistent results when integrating Oracle Applications databases.

Company officers:
- Helene Abrams, CEO and founder
- Richard Earley, president and chief operating officer

Milestones:
- February 1998: Firm founded as Data Merger Technologies Inc.
- September 1999: First product launched.
- January 2001: Granted patent for methodology.

Employees: 77; 100% annual growth projected

Profitability date: Expected by August

Burn money: $13 million from M Group Inc., UBS O'Connor LLC and others

Products/pricing: Instance Cleansing, Change Key Flexfield, Instance Consolidation and others range from $150,000 to $2 million each.

Customers: British Telecommunications, Cummins Inc., Infogrames Entertainment SA

Partners: Aris Corp., Computer Systems Authority, Mincom Ltd., P4C Inc.

Red flags for IT:
- Conversion projects still require experts versed in a company's Oracle Applications implementations and business processes.
- The software doesn't currently support all Oracle versions.

COMPUTERWORLD emerging companies

The basic capabilities of Crystallize's software, says Abrams, are copying, changing, filtering and merging data. Those processes are combined into more than 20 applications that focus on specific business needs.

Users first describe their company's business logic, then use Crystallize's software to search existing databases to uncover the underlying database rules encoded in triggers and procedures. They then combine those with the built-in rules in the repository and generate the commands to perform the conversion. The source data is "frozen," then transferred to a temporary store while it's converted. A cutover process picks up the interim transactions and populates the data into a new implementation of Oracle Applications.

Risks and Benefits

Greenbaum says Crystallize takes away two major causes of pain: the high price of converting financial systems and the long time frame required. And because it's a packaged set of processes, he says, Crystallize software has a better chance of working well the first time.

Lacey warns, however, that his project still required significant resources. British Telecom had to put people versed in the firm's business processes and its Oracle software on the project. In addition, he says the number of machines needed to hold the interim data transfer was larger than he expected. The project took five months — one month longer than planned due to problems gathering those necessary human and physical resources.

Another caveat: Crystallize's rules engine is version-dependent, acknowledges Abrams. Right now, it works with Oracle Versions 10.7, 11.03 and 11i.

The company's goal, says Abrams, is to spread the same approach to other database-driven applications, such as enterprise resource planning and supply-chain management packages, allowing customers to update and change the software installations in concert with new business structures and changing data needs. ◗

Johnson is a Computerworld *contributing writer in Seattle.*

[the buzz
STATE OF THE MARKET]

Package Deal

There's no product that competes directly with Crystallize's offering for Oracle Applications change management, says Joshua Greenbaum, a principal at Enterprise Applications Consulting.

The traditional brute-force methods for integrating Oracle Applications databases require using internal IT staff or hiring consulting firms, he says. That approach can be expensive and time-consuming. But by packaging the process, Greenbaum explains, Crystallize can give customers a completion time and projected cost with a high degree of confidence in hitting those marks.

Another advantage to Crystallize is that the migrated data is clean and accurate. Maintaining data integrity, normalization and removing duplicate and garbage data are of key importance in this kind of project, says Greenbaum. Crystallize is good at making sure that the data is right, he says, and the company backs it up with testing and validation. The brute-force method that many consultants use can't offer the same promise of accuracy, he says.

IT consulting firms are likely to adopt a packaged software methodology in the future, says Helene Abrams, CEO of Crystallize. Her company is working with several large consulting firms, she says, training them on Crystallize's tools and hoping to form working relationships. Abrams says she doesn't see consultants – or for that matter, Oracle itself, a natural choice to enter the market – becoming competitors.

Greenbaum agrees, adding that consulting firms have a billable-hours business model, not a software licensing model. He says Crystallize's future competition is more likely to come from a company similar to itself: an Oracle third-party partner.

The market for Crystallize's software is limited. Since it's focused solely on particular versions of Oracle Applications, the number of potential customers ranges from about 5,000 to 7,000, says Greenbaum. And only those companies that have a business need – a merger, a spin-off or another change that makes it preferable to modify the underlying database structures of their back-end applications – are likely to be interested.

But even if another firm was to tackle the same problem, Greenbaum says, it will take the right combination of Oracle experience and start-up talent to build the necessary products. "It was an opportunity that existed for a long time but waited for the right entrepreneurial outlook to take advantage of it," he says.

– Amy Helen Johnson

E-Commerce Architects

Successfully moving brick-and-mortar companies into e-commerce requires special technologists who are also intimate with the business side of organizations.

By Sharon Watson

WHEN HE WAS IN college, Tim McCauley wanted to fly. So he majored in aeronautical engineering.

Yet today, instead of climbing into a cockpit or designing ailerons, he's helping to build an e-commerce architecture for ordering amoxicillin, vitamin A and more for Walgreen Co., one of the nation's largest drugstore chains.

"Aerospace had dried up by the time I graduated in 1990," explains McCauley. He says he also realized that to be any good as an aircraft designer, he'd probably need a Ph.D. "It's an interesting area, but doing those formulas is only so much fun," he explains.

So instead of enlisting in the Air Force, McCauley joined Chicago-based Andersen Consulting (now Accenture). "I'd always really enjoyed computing," he says, recalling memories of his parents' first computer from Apple Computer Inc. Andersen made good use of his avocation, deploying McCauley in a variety of roles. His last consulting job was at Deerfield, Ill.-based Walgreen, which offered him a full-time job in the IT department.

All the skills and experience he gained at Andersen, such as programming and business consulting, as well as his initial IT positions at Walgreen, became the superstructure for McCauley's current role as manager of project development in the drugstore chain's e-commerce department.

In other words, he's the company's e-commerce architect. And while McCauley may not have taken a direct course to his position, bringing e-commerce into Walgreen's existing IT architecture requires him to not only draw on all his diverse technical skills, but also to be intimate with the company's business strategies and to know how IT should enhance them.

Prescription for Success

That's the very blend of business and IT skills that firms increasingly seek in their e-commerce architects, who must also take on the roles of diplomat, champion and consensus-builder. "I don't think you can do the job if all you know is the technology," warns McCauley. "You may be able to build a great Web site, but it won't support the business."

Walgreen's stores *are* its business. The company's backend IT systems exist to make the stores more competitive, and a large part of Walgreen's e-commerce focus is on making life easier for its pharmacists and customers.

To accomplish that, McCauley oversees nearly all technology related to e-commerce. The manager of applications development reports to McCauley, as does a quality assurance team and all e-commerce consultants. He works with peers in marketing, pharmacy services, store operations and other IT areas, such as networking and database administration. McCauley's ultimate responsibility is ensuring that e-commerce services integrate transparently with the company's existing systems.

That's an enormous task: The company's systems support more than 3,300 stores and their pharmacists, as well as a warehousing and distribution network.

To create the architecture necessary for this integration, McCauley drew heavily on his technical background. "If you understand data models and database architectures, it's a lot easier to know how new applications will fit on top of those," he says.

Not only did McCauley have that expertise, but he also knew the specific data structures of the company's pharmacy information system, having helped design it during his early years at Walgreens. "Understanding that database was very important to the integration," he says.

But not all of the issues are technical, he adds, such as one very important guideline: "You never launch new applications during the Christmas season," McCauley says, explaining that no matter how intuitive the application, it still requires pharmacists to learn something new during the stores' highest revenue-generating season of the year — and that's definitely asking for trouble.

Technologist and Diplomat

McCauley says that no matter how difficult these technical puzzles are, he loves solving them. "Whenever we can take advantage of what we've built and add to it, that's really fulfilling," he says, citing examples such as in-store Web registration and features that let customers keep their health histories online at Walgreen.

He says he's also looking forward to working with evolving technologies such as customer relationship management systems and the wireless Web. "As soon as we find a way for wireless applications to drive sales, we'll do them," McCauley says.

What's most challenging, he says, is getting people to integrate as smoothly as his systems do. Before any e-commerce application may be rolled out, McCauley needs approval from his boss, the director of e-commerce; the CIO; and a host of other executives, especially those overseeing the store operations.

"It's a challenge to not step on any toes and yet try to get things done quickly," he says.

Yet McCauley says he benefits from all this exposure to Walgreen's core business, because he's poised to either continue along a technical career track or move into business management. "But I wouldn't want to leave this area right now," he says, noting that he works with interesting technology that truly supports the business. "It's rare to have a job where you enjoy coming to work — and I do."

Watson is a freelance writer in Chicago.

TIM McCAULEY

Job title: Manager, project development for e-commerce

Company and location: Walgreen Co., Deerfield, Ill.

How he got the job: Hired by Walgreen for its IT product-support area after being an on-site consultant for 18 months. Worked in many IT areas; helped develop a critical pharmacy information system that's the backbone of the company's e-commerce system. Joined the e-commerce department when it formed in October 1999.

Skills required: A heavy programming background, with fluency in syntax and program design, although McCauley says understanding a language's capabilities is more important to an e-commerce architect than actually being able to program in it. Database design and programming skills are critical; experience with warehousing and logistics systems is helpful. Communication, team building and diplomacy skills, as well as a thorough knowledge of the company and its industry, are vital.

Training needed: McCauley received almost all of his IT training on the job, through assignments at Andersen Consulting (now Accenture) and at Walgreen. His people skills were honed watching two of his bosses, both pharmacists. "They dealt with ill, worried people day in and day out, so they know a lot about how to handle people," he says.

JEFF SHORTINO

Job and salary potential: McCauley declined to reveal his salary. However, he did say that his deep knowledge of Walgreen's business and IT structures increases his value to the company and that his is considered a management position. Recruiters say salaries for similar positions range from $90,000 to $150,000, depending on skills and responsibilities.

Career path: E-commerce architects with strong business knowledge may either move up through the IT ranks to the CIO slot or could choose a business management path.

Advice: "Be as well-rounded as possible," McCauley says. "Don't always be on the front end, but also do testing, support, rollouts and conversions. Learn all about the business as you go. If you don't, you won't have a lot of value."

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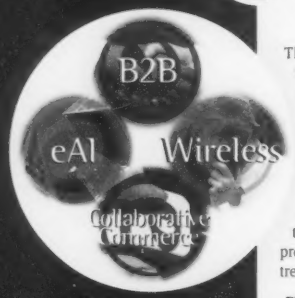

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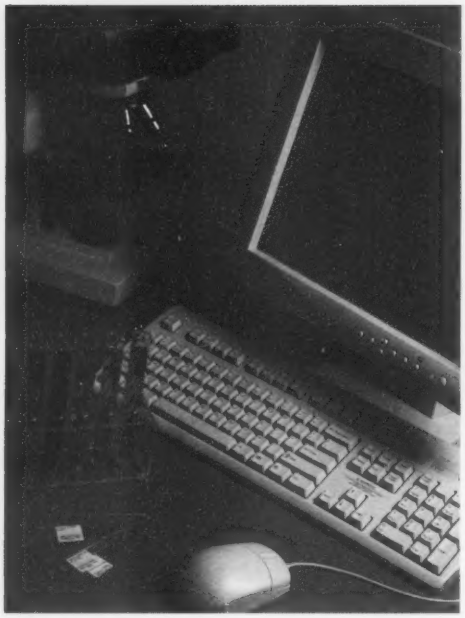

IT Careers in *Healthcare*

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Digineer, Inc.
Cincinnati, OH

Among the firms that healthcare institutions look to for development and creation of new software solutions is Digineer, based in Cincinnati. Founded in 1986, the firm has completed custom software development for the industry, including state-of-the-art disease management software being used by the world's most prominent clinic for diabetes.

"We're now doing some slick wireless work and web-based tools to support physicians," says Lisa Kaminski, chief talent agent for the firm. "In both cases, the effort is designed to increase ease of use and convenience of data and tools for the physician."

Digineer historically hires individuals who have object-oriented and web-development skills. "We also need people who have team skills but who can work independently and directly with our clients," says Kaminski. "This is a fast-paced environment. The work itself is the biggest draw for our employees."

Kaminski says that because the solutions and products developed at Digineer tend to be groundbreakers, the experience is a learning one. "We create and provide turn-key products, but we also work with clients who have a need," she explains. "For instance, we might have a client that needs custom software that will support transplants. We help them figure out an approach and then develop it."

HCA
Nashville, TN

HCA uses information technology to support more than 200 hospitals spread across the Sun Belt. Chris Costello, vice president of solutions and services operations, says the 1,000-person IT organization is a centralized service for its hospitals, from revenue cycle management to clinical systems.

Currently, HCA is replacing a suite of financial packages with Lawson ERP and is creating a Java-based web browser to support revenue cycle management. Costello says IT professionals are also developing a supply management system, warehouse management system and an enterprise-wide data warehouse. "We're concentrating first on the back-office operations, to be followed by clinical data warehouse management," he explains. HCA's IT group developed a share patient records capability last year for each of its markets.

To reach these goals, Costello will hire Java programmers and architects for web-enablement projects, business analysts and IT professionals with database skills. "While we need people who have object-oriented development experience, we also want people who have a well-rounded life," he says. "We want people who do things other than work, who are accomplishment-driven and whose work experiences show a pattern of measurable success and growth."

Costello says Nashville is a growing IT community and is "the biggest healthcare town in the nation." "The healthcare industry in general is under pressure to better manage care for patients and to control and drive down costs," says Costello. "We are turning to technology as the means to create that improvement."

Mount Sinai NYU Health
New York, NY

Mount Sinai NYU Health applies information technology with the precision of a surgeon, creating and putting to use systems and packages that support five world-class hospitals and interweave with the systems that support the NYU and Mount Sinai Schools of Medicine.

Yee Lam, technical staffing specialist, says the healthcare giant earned the *U.S. News & World Report* "Consumer Choice Award" in its survey of best hospitals. "We have more than 450 IT professionals who provide service to all five sites. The technology directly impacts our patients, making what we provide more effective and efficient," she says.

Mount Sinai NYU Health recently rolled out its new five-year implementation plan for IT. "The plan puts patients at the center of all we do," says Lam. "The strategic information management plan, known as SIMP, will weave together separate strands of clinical and administrative data into an all-in-one system. This partnership-wide information system will be so comprehensive and easy to use that it will give caregivers instant access to all the information they need about a patient's condition – whenever and wherever they need it."

To support the healthcare giant, Lam is hiring individuals for various areas, including applications and architecture, network infrastructure and distributed systems. "Besides technical skills and experience, we need people who can fill a need today but who have the ability to grow for the future," she says. "We've found that when IT professionals get boxed in, their work becomes limited and they become dissatisfied.

"IT in our organization touches every department," Lam says. "There is constant growth in using technology to provide patient care. The caregivers on the front line can't do it alone. IT provides them with the speed, accuracy and the quality of care for which Mount Sinai NYU Health is world renowned."

Partners HealthCare
Charlestown, MA

Partners HealthCare is an integrated, not-for-profit health care delivery system offering patients a continuum of coordinated, high-quality care. Founding hospitals, recognized for their world-renowned patient care, teaching and research, include Brigham and Women's Hospital and Massachusetts General Hospital, both teaching affiliates of Harvard Medical School. Partners also includes primary care and specialty physicians, community health centers and other health-related entities.

Bill Ramon, staffing specialist, says Partners information systems group, with approximately 600 employees, is undertaking more than a dozen projects that are critical to the health system, from wireless systems to implementation of PeopleSoft's HRMS applications. Partners also uses sophisticated, home-grown applications. For example, the group developed order-entry systems to keep patient encounter notes and a system to coordinate medication delivery.

"To support the projects, we need system designers, analysts, people with visual-basic experience and web development programmers," Ramon says. "It's helpful for our analysts to have a clinical background and know our customer's view." Ramon expects to hire approximately 100 people in 2001.

"We are an expanding operation, and we do really cool projects," says Ramon. "We have a strong commitment to our employees' ongoing professional development with opportunities for company-paid training, a brown bag lunch series, and a tuition reimbursement program. There is no one career path, but there are opportunities to gain exposure to a variety of projects and to pursue a future with Partners in either a technical or a managerial career."

IT careers

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Will provide technical and administrative leadership in implementation, use and development of production operation software tools. This includes working with multiple departments in the planning, designing and implementation of new functions/capabilities.

Requirements: 5+ years of progressive experience in maintenance/development of software applications. Four-year college degree in computer science or technical training equivalent required. Demonstrated capability with distributed, client/server system development and implementation needed. Experience with programming languages, relational database concepts and theory and relational database products, such as Sybase, Oracle and Informix required.

Please forward your resume and a cover letter, Attn: Ms. Amy Mitts/Lead Software Engineer, MBNA Hallmark Information Services, M-S 4411, 16001 Dallas Parkway, Addison, TX 75380-9051.

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Software Engineers and Other Information Technology Professionals

Employee-owned Science Applications International Corporation (SAIC), a Fortune 500 company, provides high-technology services and products to government and commercial customers. **SAIC** and its subsidiaries have estimated annual revenues of over $5.5 billion and more than 41,000 employees at offices in over 150 cities worldwide. Currently, we have multiple openings at various U.S. locations for SOFTWARE ENGINEERS AND OTHER INFORMATION TECHNOLOGY PROFESSIONALS.

SAIC offers a competitive salary and comprehensive benefits package. Qualified applicants please forward your resume and salary requirements to: **SAIC, Human Resources, REF: PT, 1450 Poydras Street, Suite 670, New Orleans, LA 70112; Fax: (800) 650-3562.** We are an Affirmative Action Employer who values cultural diversity in the workplace.

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More information about SAIC is available on the Internet at:
www.saic.com

Software Engineer sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. Design & develop software applications &/or software tools that incorporate client/server architecture &/or are web–enabled. The software applications interface with a variety of relational database management systems & are platform independent. Analyze requirements. Create designs & design documentation. Code, test, & de–bug the software applications. Engage in project management as required. Use C/C++ & JAVA in the design & development process. Requires Bachelor's or foreign equivalent in comp. sci. or related field(incl. elec. eng.& electronics eng.& electronics & communication eng.); working knowledge of C/C++,JAVA,& relational database management systems (working knowledge may be gained in employment setting or in an academic program). 8am-5pm,M-F;$66,100/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II,#400,1515 Arapahoe, Denver, CO 80202,& refer to Job Order Number JL1117420.

Software Engineer sought by company in Louisville, CO that provides network computing storage to work in Louisville & other unanticipated job sites in the US. Under close supervision, engage in moderately complex tasks with respect to providing technical support for our software products. Address & resolve technical problems that clients are encountering with software products. These software applications incorporate client/server architecture & run on a number of different platforms. Modify & enhance software applications as required, including designing & developing the enhancements & modifications. Use C, C++, JAVA, & HTML in modifying & enhancing the software applications. Work is closely monitored Interface with development department & the infrastructure team in order to resolve recurring problems & bugs. Requires Bachelor's in comp. sci. or related field(incl. comp. eng.);working knowledge of JAVA & HTML (working knowledge may be gained through employment experience or through academic program). 8am-5pm, M-F, $52,000/yr.Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II,#400,1515 Arapahoe, Denver, CO 80202,& refer to Job Order Number JL 1117438.

Sr. Software Engineer sought by financial services company in Englewood, CO, to work in Paramus, NJ & other unanticipated job sites in the U.S. to, at a senior level, design & develop software applications which run on Tandem architecture. The Tandem applications access an Enscribe database & run on a Guardian operating system. Analyze requirements. Create designs & design documentation. Code, test,& debug the software applications. Provide user training & support. Use C programming language & SQL in the development process. Requires Master's or equivalent in Computer Science or related field(including Electronic Engineering).Specifically, it requires a Master's, or foreign degree equivalent, plus 3 yrs of progressive Tandem software development experience, or a Bachelor's, or foreign degree equivalent, plus 5 yrs of progressive Tandem software development experience.$70,000/yr.M-F;8am-5pm.Respond by resume to James Shimada, Colorado Dept of Labor & Employment, Tower II,#400,1515 Arapahoe St., Denver, CO 80202,& refer to Job Order No.JL1117530.

Computer

The University of Illinois prides itself in its atmosphere conducive to study, shared discovery and innovative approaches to teaching and learning. Currently, the Office of Business and Financial Services, Urbana-Champaign Campus, seeks a computer professional who enjoys challenges under tight deadline pressure.

SQL DATABASE ADMINISTRATOR

You'll oversee designs, operations, upgrades, monitoring, change management and process control of our entire database environment; this includes Internet-based, client/server and mainframe applications. Other duties: analyzing databases, resolving data integrity problems, preparing documentation and training materials, working with project teams to assess future infrastructure requirements and recommend proper action; and coding and maintaining interfaces to core databases.

Qualifications include:

A BA/BS degree in Computer Science, Management Information or similar field (or Microsoft SQL Server Certification) and 2 years' SQL Server Database Administration experience (or BA/BS and 3 years' full-time work on SQL 6.5/7.0). Working knowledge of SQL Server 7.0 database engines, data design, NT, Oracle PL/SQL, Java, Data Warehousing or Access-to-SQL conversion methods a definite plus.

UI offers a salary fully commensurate with qualifications and experience.

A resume, including names, addresses and phone numbers of three professional references, should be submitted by April 6, 2001 to:

Ms. Janier Koss
U of I Office of
Business & Financial Services
342 Henry Administration Bldg.
506 S. Wright Street
Urbana, IL 61801

Phone: (217) 333-2497
Fax: (217) 244-5821
E-mail: jkoss@uillinois.edu
Job Description also posted on:
http://www.oba.uillinois.edu/position
Or visit us at: http://www.uillinois.edu

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The search will continue until the position is filled.
The University of Illinois is an Affirmative Action, Equal Opportunity Employer.

Software Quality Engineer sought by company in Englewood, CO to work in Englewood & other unanticipated job sites in the US. For a company that provides software for the telecommunications industry, using Sun Operating Systems & UNIX Scripting, including PERL, working in both UNIX & PC environments, develop & initiate st. ards & methods for inspection, testing,& evaluation. Provide input & participate in the requirement & design phases to impact the software development process,& to offer quality improvements. Develop & execute comprehensive system test plans & procedures for new product releases. Report on software quality during all testing phases (integration to acceptance) & at the time of release. Work with developers to resolve software issues. Execute test scripts used for regression & system testing. Support development of traceability matrices in order to track requirements & to test plans. Requires Bachelor's or foreign equiv. in comp. sci. or related field;3 yrs. exp. as a software engineer, using UNIX, Sun Operating Systems & UNIX Scripting,incl.PERL.8am-5pm,M-F.$66,058/yr.Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II,#400,1515 Arapahoe, Denver, CO 80202,& refer to Job Order Number JL 1117439.

OBJECT TECHNOLOGY CONSULTANT - wanted by Software Development Company. Requirements include Bachelor's Degree in Computer Science or related field or equivalent with 2 yrs of development experience. Travel may be necessary. Please respond to: Robyn Federman, HR Representative, IONA Technologies, Inc., 200 West Street, Waltham, MA 02451.

Software Engineer (2 positions) – Research, design and develop computer software systems in conjunction with hardware product development applying principles and techniques of computer science, engineering and mathematics analysis. Will utilize Lotus Notes and Novell NetWare. Requires a Master or equivalent in Computer Science, Electronic or Electrical Engineering or Mathematics. Equivalent is a Bachelors degree plus 5 yrs exp. Requires 3-5 yrs exp in the job offered or 3-5 yrs exp as Systems Engineer, Programmer Analyst or Systems Analyst. 3 yrs exp if Masters degree or 5 yrs exp if Bachelors degree. Must have 1-yr exp in Lotus Notes and Novell NetWare. 5 day, 40 hr/wk. $66,100/yr. Please mail resumes to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number JL1117514.

Instructional Technology Coordinator sought by university in Ft. Collins, CO to work in Ft. Collins & other unanticipated job sites in the US. Design, develop & maintain a college Internet web–site & server relating to the study of natural resources & geology using distance learning technologies. Design the relational database management systems using cold–fusion database management tools. Implement & integrate HTML,PERL,CGI & ASP technologies into the web–sites. Troubleshoot issues with the web–sites & relational database management systems & provide technical support to faculty & students. Requires Bachelor's in comp. sci., eng., or a field of natu1 resrces (incl. geology);working knowledge of distance learning technologies (working knowledge may be gained through employment experience or in an academic program). 8 a.m - 5 p.m., M-F.$50,000/yr.Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II,#400,1515 Arapahoe, Denver, CO 80202,& refer to Job Order Number JL1117434.

Senior Software Engineer sought by company in Denver, CO specializing in business software solutions to work in Denver,& other unanticipated job sites in the US. At a senior level, design & develop software applications &/or software tools that incorporate client/server architecture &/or are web–enabled. The software applications interface with a variety of relational database management systems & are platform independent. Analyze requirements. Create designs & design documentation. Code, test,& de–bug the software applications. Engage in project management as required. Use C/C++ & JAVA in the design & development process. Requires Master's degree or equivalent–specifically, this position requires a master's degree, or foreign equivalent, in computer science or a related field plus 3 years of progressively more responsible software development experience (this experience may be gained prior to or after the master's degree is earned); or a bachelor's degree, or foreign equivalent, in computer science or a related field plus 5 years of progressively more responsible software development experience. Working knowledge of C/C++,JAVA,& relational database management systems. 8am-5pm,M-F;$66,100/yr.(2 openings).Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II,#400,1515 Arapahoe, Denver, CO 80202,& refer to Job Order Number JL1117436.

AirFlash, Inc. has multiple openings for Software Engineers for its Saratoga, CA office. For these positions, contact: HR Dept, AirFlash, Inc., 12900 Saratoga Avenue, Saratoga, CA 95070. For More job opportunities see (www.Airflash.com)

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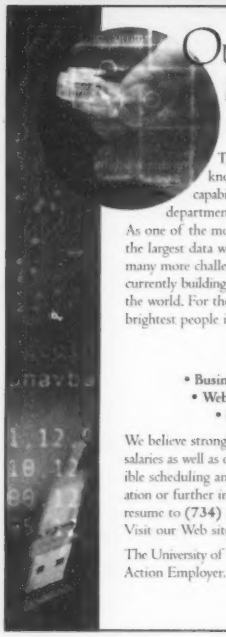

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The University of Michigan Health System, known for its unsurpassed technology and research capabilities, is seeking qualified professionals for our department of Medical Center Information Technology. As one of the most wired hospitals in the nation boasting one of the largest data warehouses in our industry, we can offer you many more challenges than most health environments. We are currently building one of the largest clinical information systems in the world. For the opportunity to work alongside some the brightest people in health care, please contact us today.

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University of Michigan Health System

MBNA Hallmark Information Services, a subsidiary of MBNA, the worlds largest independent credit card lender, is accepting applications for several **software engineering** positions.

This position is responsible for technical analysis, designing, coding and testing distributed application systems software. This position also provides support for production applications, to include problem analysis and resolution. Requirements include B.S. in Computer Science, Math, Engineering or equivalent. Minimum of 2 years experience in maintenance/development of software applications and with UNIX and NT operating systems required. Minimum of 2 years experience with Microsoft C++, Visual Basic, PowerBuilder or related development applications and tools.

Please forward your resume and a cover letter, Attn: Ms. Amy Mitts/Software Engineer, MBNA Hallmark Information Services, M-S 4411, 16001 Dallas Pkwy, Addison, TX 75380-9051.

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Softima, a Software Consulting Services firm based in Dallas, Texas is looking for MS/BS professionals experienced in any of the following skill sets:

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-Java, Web development
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Systems Analyst wanted in Houston, TX.

Respond to: HR Dept., Houston Computer Center, Inc. 10641 Harwin Dr., Suite 500, Houston, TX 77036

Systems Analyst. Provide product tech assistance to company staff, tech presentations and customer training; produce product demonstrations; administer & manage window NT, client/server, LAN/WAN; prepare qualification of prospect in regard to tech aspect of how our product will satisfy customer requirements; provide phone &/or onsite tech support to customers; prepare tech materials, customer proposals, RFI & RFP. Req: MS in computer science/engg. 40hrs/wk, 8-5pm, $60901/yr. Send resume to MDCD/ESA PO Box 11170, Detroit, MI 48211-1170. Ref. #224999. Employer Paid ad.

Director of Consulting needed by a Client/Server Configuration Mngmt. Consulting Services, Products & Training in Glencoe, IL. Must have a M.S. in Computer Science/Physics/Mathematics and 1 yr. exp. in software development cycle process. Respond to: HR, Catalyst Systems Corp., 743 Brookvale Terrace, Glencoe, IL 60022.

Full time Software Consultant using C/C++, Visual Basic, EDI, SQL, MS SourseSafe, Unix/Linux and business processing knowledge using SLC, CMM, Level 2, and ISO9000. Must have a Bachelor's degree in Computer Engineering or a foreign degree equivalent. Must have 1 year exp. with above duties. Salary $60,000/yr. Send Resume to: Erik Gomez, I-Stream, Inc. 3103 Bee Caves, Suite 105, Austin, Texas 78746.

SENIOR SYSTEMS ENGINEER-wanted by Software Development Company. Requirements include a Bachelor's Degree in Computer Science or related field or equivalent with 4 yrs of object oriented technology experience. Travel may be required.
Please respond to Robyn Federman, HR Representative, IONA Technologies, Inc., 200 West Street, Waltham, MA 02451.

SOFTWARE ENGINEER-wanted by Software Development Company. Requirements include a Bachelor's Degree in Computer Science or related field or equivalent with 2 yrs experience in a development environment. Travel may be necessary. Please respond to: Robyn Federman, HR Representative, IONA Technologies, Inc., 200 West Street, Waltham, MA 02451.

STUDY DEVELOPERS/ORACLE CLINICAL SPECIALISTS. Positions needed for pharmaceut'l client in Ann Arbor, MI. Will process, quality check & batch load clinical study data; devel Clinical Study applic's; implement & maint dept homepage; define & validate new PL/SQL functions. Must have skills in Oracle, PL/SQL, JAVASCRIPT & HTML. Req's Master's deg in Comp Sci/Info Systems OR Bach deg in Comp Sci/Info Systems plus 3-5 yrs exp as Systems Analyst or related occup. Must have at least 6 mos exp in pharmaceut'l env'mt. Send resume to Jeff Bennett, Otterbase Technical Services, 77 Monroe Ctr, Ste 605, Grand Rapids, MI 49503.

Programmer – Bachelors in Computer Science or equivalent required. Minimum of two years experience in Visual Basic 5 or 6, 2 years experience in C++ and 1 year experience in SQL Server database design. Position with GBS Inc. located in Boulder, Colorado. Send resume and references to 2500 Central Ave, Suite G Boulder CO 80301

Senior software quality management consultant needed for software development and consulting firm located in Oak Brook, Illinois. job duties include: Develop procedures for software quality assurance and testing. Customize testing methodologies to fit environments; develop test plans and test cases and conduct software testing using automated tools. Project management, process improvement, and software quality assurance. Applicant must have 5 yrs. exp. in the job duties listed above. 40hrs/wk, 8am-5pm. M-F. $80,000/yr. Send 2 copies of both resume & cover letter (no calls) to: Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605. ATTN: Sheila Lindsey, REF# V-IL 23564-L. Applicants must show proof of legal authority to work in the U.S. AN EMPLOYER PAID AD.

COMPONENT DESIGNER-wanted by Software development company. Requirements include Master's degree in Computer Science or related field or equivalent. Travel may be required. Please respond to: Robyn Federman, HR Representative, IONA Technologies, Inc. 200 West Street, Waltham, MA 02451.

IT Professionals

Entergy, one of America's largest utility companies, has multiple openings for the following occupations in multiple locations:

- Information Technology Professionals
- Systems Analysts
- Computer Programmers
- Software Engineers

For immediate consideration, please forward your resume and salary requirements to: Entergy Corporation and operating subsidiaries, Attn: Ms. Lori Hendler, HR Department, PO Box 61000 New Orleans, LA 70161. Phone: 504-576-4117 EOE/M/F/D/V Principals only. You will only be contacted if you are considered for an interview.

Prgrmmr Anlst. No Exp. Reqd. Main., implmnt Oracle Fin., database design, qlty. cntrl of systs. Developer 2000, SQL, PL/SQL, SQL*Plus, HTML, CGI. Req: BS in Engnrng. 40 Hr. wk. Job/Intrvw site: Calabasas, CA. Send resume to Alcatel Internetworking, Inc. 26801 W. Agoura Road, Calabasas, CA 91301.

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IT CAREERS

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Software Engineer (Atlanta, GA): Provide software development, requirement analysis & system architecture services to Web applications using Cold Fusion, Java, EJB, Javascript, Perl, C++, Sybase & Oracle programming. Req. master's in computer science or other related field plus at least 6 months exp. in job offered. Resume to: HR Manager, Peregrine Systems, P.O. Box 190006, Atlanta, GA 31119.

LEVEL 8 SYSTEMS INC, an industry leader in middleware & large-scale business application development, seeks: Software Developers, Product Specialists and Application Support Engineers for the development, testing and technical support of products and services. Positions may require travel throughout North America 90% of the time. Competitive salary based on experience. Positions located in Cary, NC, New York, NY and Dulles,VA. Apply by sending resume to Kathy Burnet, HR Department, Level 8 Systems, Inc., 8000 Regency Parkway, Cary, NC 27511.

Applications are requested for the post of Programmer/Analyst. Candidates should have experience in Java and/or Perl. Please e-mail resumes to resumes@ggsystems.com or fax them to GG Systems at 510-490-1730. You can also apply on our website at www.ggsystems.com.

Beansoft, Inc., an IT services company located in Nashua, NH has several senior and entry-level positions available for qualified candidates possessing MS/BS or equivalent and/or relevant work experience.

We are presently considering applicants for:

* Software Engineers
* Programmer Analysts
* IT Consultants
* Project Managers
* Application Developers

Must be willing to travel and relocate as required. Please forward resumes to: resumes@beansoft.com

ABB Automation is the world's leading supplier of meters, software and systems, for the electric utility industry.

ABB is currently seeking: Software and Firmware Engineers to design and develop software and firmware for electricity metering systems. Positions are located in Raleigh, NC.

Apply by sending a resume to ABB / Human Resources at Raleigh.Staffing@us.abb.com or fax to (919) 250-5748 (no phone calls please).

Equal Employment Opportunity Employer.

Programmer Analyst. Design, develop, analyze and implement client server based software applications using software development tools in multiple environments and platforms. Design and develop software applications using Java, Visual Basic, SQL Server, Windows NT. Demonstrated ability designing and developing software applications using Java, Visual Basic, SQl Server, Windows NT. $55,000/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 2 yrs. exp. and B.S. in Comp. Sci., Eng., rel. field/equiv. Send 2 resumes: Case #20010550, Labor Exchange Office, 19 Staniford Street, 1st fl., Boston, MA 02114.

Sr. Consultant - Commerce Applications. Job location: Herndon, VA. Duties: Design, develop & implement internet, intranet & extranet applications, incl. elec. banking, on-line sales, on-line service, messaging architectures as well as intranet enabled data warehouses, web-based client interfaces & intranet & extranet security using Java, EJB, JDBC, Servlets, JSP & LDAP. Design & develop database solutions & distributed applications using applications servers incl. NAS & WebLogic. Mentor jr. consultants. Requires M.S. in Comp. or Info. Sci., Eng. or related field & 3 yrs. exp. in the job offered or 3 yrs. exp. as a Software Eng., Analyst, Analyst/Prog. or Prog. Will accept B.S. (or foreign equiv.) & 5 yrs. prog. exp. in the comp. ind. in lieu of M.S. & 3 yrs. exp. Exp., which may have been obtained concurrently, must incl.: 3 yrs. exp. designing, developing & implementing internet, intranet & extranet solutions & 3 yrs. exp. using Java. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Salary: $85,000/yr. Send resume (no calls) to: Diane Tuccito, AnswerThink, Inc., 817 W. Peachtree St., Suite 800, Atlanta, GA 30308. Must have legal auth. to work in U.S.

Senior Software Engineer (multiple openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have six months of experience in job offered or as a computer professional as well as 6 months of experience using: 1 of Group A as follows: Group A - Windows NT, Oracle, Sybase, Informix, SQL Server. Master's degree in one of several limited fields: Computer Science/Applications, Engineering, Chemistry, Math, Physics, or a business related field. Will accept Bachelor's degree with five years of progressive experience as computer professional. Salary is $112,500 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Ms. Barbara Cole, Supervisor, Greene County Team PA CareerLink, 4 West High Street, Waynesburg, PA, 15370. Job Order No.: WEB156258.

Computer

Software Engineer

Software Engineer (Bethesda, MD)- you will research, design and develop computer software systems, applying principles and techniques of computer science, engineering and mathematical analysis and carry out other software engineering duties. Required: Master's degree in Computer Science or Information Systems or MIS or Engineering (any type) or Science or Mathematics. 40 hours per week, from 9:00 a.m. to 5:00 p.m. Salary commensurate with experience. Please send cover letter and resume to: ADP IMS, 10401 Fernwood Road, Suite 280, Bethesda, MS 20817, or fax to: (301) 571-6047, or email to: adp@hiresystems.com. No phone calls, please. EOE

ADP

SOFTWARE ENGINEER Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in ASP, Visual Basic, Crystal Reports and Oracle. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and five years experience as a software engineer or computer programmer, knowledge of ASP, Visual Basic, Crystal Reports and Oracle. Salary: $95,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Ms. Mary Curran, McKeesport/Allegheny Co. Careerlink, 345 Fifth Avenue, McKeesport, PA 15132-2600, Job No. WEB156231.

COMPUTER

WebMD has job opportunities in the following locations: California (Santa Clara); Georgia (Atlanta); New York (Amherst); Ohio (Cleveland, Twinsberg); Texas, (Dallas); Tennessee (Nash-ville), and in other areas across the United States.

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* Data Communications Analyst

For immediate considera-tion, send your resume on-line at: www.webmd.com/corporate/index.html; Email: webmd@rpc.webhire.com; or Fax: 408-876-5626. When ap-plying, you must include appropriate position desired.

See our Web site for additional openings: www.webmd.com. EOE M/F/D/V. No phone calls please.

Programmer/Analyst (multiple openings): Plans, develops, tests, and documents computer programs. Converts project specifications, using flowcharts and diagrams, into sequence of detailed instructions and logical steps for coding into computer language. Analyzes, reviews and alters program to increase operating efficiency or adapt to new requirements using RDBMS and related software. Must have one year of experience in job offered or as a computer professional as well as one year of experience using: 1 of Group A as follows: Group A @ Informix, Oracle, FoxPro, Sybase, SQL Server, Progress. Work involves extensive travel and frequent relocation. Three or four year Bachelor's degree or equivalent in one of several limited fields: Computer Science/Applications, Engineering, Chemistry, Math, Physics, or business related field. Salary: $65,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Terry N. Faust, Manager, Washington County Team PA CareerLink, Millcraft Center, Suite 150LL, 90 West Chestnut Street, Washington, PA 15301. Reference: Job Order No. WEB156247

PROGRAMMER ANALYST-DALLAS, TEXAS Duties: Responsible for providing technical support on manufacturing systems employing Oracle based client server systems with Oracle Applications (Intranet/Internet), integrated third party applications packages and Oracle Data Warehouse. Work directly with information technology team members to problem solve information systems business and technical issues. Proactively monitor batch and other application background processes and provide applications solutions to business needs. Education: Bachelor's degree in Computer Science, Physics or Math. Experience: 2 years in the job offered or 2 years in the related occupation of Systems or Programmer Analyst. Special Requirements: 1 year in related occupation must involve developing Oracle based client server systems for manufacturing. Salary: $70,200 per year. Work week: 40 hrs. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to 1117 Trinity, Room 424T, Austin, Texas 78701. JO# TX1180390. AD paid by an Equal Opportunity Employer

BUSINESS SYSTEMS ANALYST-DALLAS, TEXAS Duties: Provide business and client/server solutions for world-wide management, planning and operations. Perform Oracle Database Administration, including system storage, planning, system security, database backup and recovery. Design and develop applications and maintain Oracle and Web servers to support management and operations requirements. Design, develop and implement database driven internet applications. Management reporting using Oracle, SQL, Business Objects in Software (BOI) and Visual Basic. Education: Master's degree in MIS, Production or Industrial Engineering. Special Requirements: Oracle Database Management, Structured Query Language (SQL) and Visual Basic may be gained through 6 months professional experience or through research and coursework totaling 3 semester (or equivalent quarter) hours. Any single course may concurrently satisfy any one or more of the above requirements. Salary: $58,154 per year. Work week: 40 hrs. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to 1117 Trinity, Room 424T Austin, Texas 78701 JO# TX1180118. AD paid by an Equal Opportunity Employer

BUSINESS SYSTEMS ANALYST-DALLAS, TEXAS Duties: Analyze business and operating procedures to devise most efficient methods of accomplishing work. Manage day to day operations of Systems Applications and Products (SAP). Provide support for sales and distribution systems. Provide end-user systems support for Distribution Resale Management (DRM) and Applications. Analyze, troubleshoot and solve system problems and recommend solutions of enhancement of systems. Develop and update operational manuals and manage future implementations and upgrade DRM systems. Education: Bachelor's degree in Comp. Science or Comp. Eng'g. Special Requirements: Knowledge through course work or experience to include: Systems Applications and Products/SAP (1 year experience or 6 credit hours) and Distribution Resale Management/DRM (1 year experience or 6 credit hours). Salary: $85,200 per year Work week: 40 hrs. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to 1117 Trinity, Room 424T Austin, Texas 78701. JO# TX1180389 AD paid by an Equal Opportunity Employer

Oracle Applications Sr. Consultant. Duties: Design, implement, install & configure Oracle database & Oracle applications incl. Oracle Financial, eCRM, eProcurement, HR, Payroll, Mfg.,Project Mgmt. & Resource Planning. Debug & troubleshoot Oracle application modules of client system using SQL Plus & Oracle Enterprise Manager. Patch & upgrade Oracle 8i & 11i application modules. Perform database capacity planning & database tuning using Oracle Mgmt. & Tuning Mgr. Design & implement security strategy & backup & recovery strategy for Oracle database system & applications. Requires: M.S. in Comp. or Info. Sci., Eng. or related field & 3 yrs. exp. in the job offered or 3 yrs. exp. as a Database Adm., Software Eng. or Systems Eng. Exp., which may have been obtained concurrently, must incl.: 2 yrs. exp. designing, implementing, installing & configuring Oracle database & 2 yrs. exp. designing & implementing backup & recovery strategy for database. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Salary: $100,000/yr. Send resume (no calls) to: Diane Tuccito, AnswerThink, Inc., 817 W. Peachtree St., Suite 800, Atlanta, GA 30308. Must have legal auth. to work in U.S.

SOFTWARE SUPPORT FOR STRATEGY CONSULTING

Decision Architects, a Monitor Group Company, providing customized software solutions in support of strategy consulting, has an immediate need to fill a range of software, database and IT positions in the Boston area.

The following positions all require a Bachelor's degree (or equivalent) in Computer Science, MIS, Business Administration, or similarly relevant field, and 2-6 years' relevant experience to include the requirements described below:

PROGRAMMER – ANALYST and DATA BASE DESIGN ANALYST POSITIONS

- **Application Development Analyst (Business Systems)** with experience building software-based business analysis models, and a functional understanding of financial accounting.
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Airline Site-Backed Study Attacks Reservation Fees

Claims the travel industry is controlled by a computer reservation system 'oligopoly'

BY MICHAEL MEEHAN

ALMOST A YEAR ago, the federal government began investigating airline-owned travel Web site Orbitz LLC for alleged anticompetitive activities. Now, an Orbitz-commissioned study seeks to defang the airlines and paint fee-based computer reservations systems as the unchecked power in the travel industry.

The study, which was released last Wednesday, claims that computer reservations systems, which charge fees to the travel agencies and airlines that use them, are able to dictate their prices because the industry is dependent upon the information that they provide.

Online travel sites such as Chicago-based Orbitz, however, can give consumers more direct access to travel information and decrease the artificially inflated costs, the study contends.

The findings were presented by John Ash, chairman of Washington-based airline consulting firm Global Aviation Associates Ltd., and Aaron Gellman, professor of management and strategy at Evanston, Ill.-based Northwestern University's Kellogg School of Management.

Fees Are Up

"Booking fees continue to rise, and they continue to rise steadily," said Ash. "Why? Basically because you have an oligopoly formed by the four major [reservations systems] which controls the distribution of the tickets."

The major computer reservations systems, Sabre Holdings Corp., Galileo International Inc., Amadeus Global Travel Distribution SA and Worldspan LP, were formed by the airlines, and some are still owned by them.

Yet the study found that airlines have lowered their reservations and sales expenses an average of 3.2% per year over the past five years, while computer reservations systems fees have increased 5.1% per year.

"Fundamentally, the cost of technology is going down, but the cost of booking fees is going up," said Bill Brunger, vice president of revenue, planning and distribution at Orbitz co-owner Continental Airlines Inc. He argued that online sales channels are the only way airlines can remove that additional cost from their tickets.

Suzi LeVine, a spokeswoman for travel Web site Expedia Inc. in Bellevue, Wash., said her firm doesn't view the situation as an online/off-line conflict but as an airline-owned/non-airline-owned conflict.

"It's about the independence of the distribution channels and whether everyone is able to compete on a level playing field," she said.

Orbitz, which began beta testing last month, is scheduled to debut in June. Owned by the nation's five largest airlines, the online marketplace promises to present travelers with unbiased screen displays that show flights ranked by lowest cost, fewest legs or most favorable times.

Yet officials from rival Web sites and computer reservations systems have argued that no airline-sponsored venture is free of bias and that Orbitz could possibly open the doors to price collusion.

The Senate Commerce Committee last summer held hearings to determine if Orbitz's airline ownership violates antitrust laws, and the U.S. Department of Justice still has an open investigation into Orbitz's business model.

But study co-author Gellman said that government regulation, which was imposed upon the computer reservations systems a decade ago, will only stifle needed technological development in the travel arena.

Reservations systems "avoid making the investment needed to move to new technology because they don't have much competition," he said.

Fees Take Flight

The airline-owned Web site Orbitz claims that computer reservations systems are creating unnatural inflation in airline ticket prices. A study it commissioned found that:

- While airlines have reduced reservations and sales costs 3.2% per year since 1995, **computer reservations systems fees have increased 5.1% per year.**
- Net profit margins for computer reservations systems range from 12.9% to 14.3%, **while the average U.S. airline made only a 4.7% profit last year.**
- The capital costs of creating a rival computer reservations system present a **nearly insurmountable barrier to entry for any would-be competitors.**

Continued from page 1

Sabre

strategic nature of that part of the business," said American CIO Monte Ford. "This is really the heart of what we do, and we decided [it] was something we were going to bring back in."

Ford said the IT move would double American's operations research department, responsible for the formulas, algorithms and mechanics involved in the airline's in-house applications development.

He added that IT would now play a much greater role in determining American's future.

"We sort of outsourced our thinking, along with outsourcing Sabre," he said. "Our goal now is to build a world-class tech organization in-house."

The sale will also include Sabre's existing outsourcing and data center contracts with American Airlines, Arlington, Va.-based US Airways Group Inc. and other airlines.

That deal would put EDS in charge of key check-in and passenger management systems that are used by dozens of airlines in the U.S. and other countries.

About 4,200 employees at Fort Worth, Texas-based Sabre will transfer to Plano, Texas-based EDS as part of the agreement, which is expected to be completed by midyear.

The deal includes the sale of Sabre's outsourcing business and IT assets, valued at $778 million, plus a 10-year, $2.2 billion contract for EDS to manage Sabre's IT systems.

Sabre's outsourcing business generated about $600 million in revenue last year. EDS will also acquire all of Sabre's data centers and data management assets, including a massive transaction processing facility in Tulsa, Okla.

Sabre's desktop and mid-range computer-management systems will be included in the deal as well.

"Our goal is to be the key IT provider inside the airline industry," said Jim Dullum, president of EDS's global transportation industry group.

EDS previously provided data center and IT support for Houston-based Continental Airlines Inc. and Mexico City-based AeroMexico.

After the sale, Sabre said it plans to focus on its travel marketing and ticket distribution business and related operations, including an application software suite and a reservation hosting unit that's separate from the IT outsourcing unit.

AMERICAN CIO Monte Ford says IT will play a greater role in determining airline's future

Sabre will also retain majority ownership of online travel agency Travelocity.com Inc. in Fort Worth, Texas, although EDS will host the Travelocity Web site and provide IT services to the Fort Worth-based e-commerce company.

Henry Harteveldt, a senior analyst at Forrester Research Inc. in Cambridge, Mass., praised Sabre for what he termed "a big, gutsy, bold move" in giving up the data center that once formed the core of its business.

"They obviously don't view anything as a sacred cow," Harteveldt said. "They want to develop the solutions which send the information though the data centers, but they obviously view the data center maintenance as low-margin stuff."

Steve Clampett, the senior vice president of software solutions at Sabre, said his company will still rely heavily on EDS.

"Part of this agreement was finding a partner with whom we can work closely in the future," he said.

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FRANK HAYES/FRANKLY SPEAKING

The Microsoft Way

WHAT IS IT WITH MICROSOFT and open source? It's not so complicated. Microsoft hates the competition from open source. Microsoft loves the benefits of open source. Microsoft wants the customers who like open source. Microsoft doesn't want to let any of its intellectual property turn into open source.

An impossible-to-resolve set of contradictions? Not to Microsoft.

Sure, Microsoft people have spent the past couple of months saying nasty things about open-source software in general and Linux in particular. Open source is "an intellectual property destroyer," says Jim Allchin, Microsoft's vice president for platforms. Beating Linux "really is Job 1 for us," says Microsoft CEO Steve Ballmer.

So what is Microsoft doing now? Letting lots of people eyeball its source code to find bugs — just like open-source developers do — and promising .Net support for Linux, the open-source standard bearer.

Is it a scam? A trick? Is Microsoft trying to pollute the purity of the open-source movement? Oh, maybe. What's more likely is that Microsoft, having spent its requisite time hissing and spitting at something new, is now proceeding to do "open source" the Microsoft way.

That means rubbing up against open source just enough to get some benefits but never losing any control of Microsoft's intellectual property. For example, the large customers in Microsoft's "open-source" program will be able to look at some Windows source code, but they're prohibited from making any changes. They can report bugs and figure out work-arounds, but that's it.

And though Microsoft says it will officially announce Linux .Net support this week, don't expect it to come in the form of open-source software. No cost to download, maybe; open, no.

That's what it comes down to, despite all the gasifying we'll hear over the next few months from pundits, open-source advocates, Microsoft allies and the rest of the usual suspects. No, Microsoft isn't jumping on the open-source bandwagon. It's just hoping to follow the parade all the way to the bank.

What's wrong with that? Nothing — as long as nobody gets the wrong idea. It's still business as usual for Microsoft — with a few open-sourceish bits grafted on.

And for big corporate IT shops, that's not such a bad thing. It might even be good news if you want to experiment with .Net applications or join the chosen few who get to see the Windows 2000 source code. If it means you can dodge some shaky function calls or choose your platform for applications, so much the better.

Just remember what it won't mean. This isn't open source — it's "open source."

So you can't count on your business partners being part of the program, and you can't share what you know about the code with anyone but Microsoft. For example, in joint applications, you can work around problems — but you can't explain the work-arounds to your partners.

What you can count on is that Microsoft isn't really confused about open source.

You can't count on Microsoft acting on any bugs you find. Microsoft says bug reports will be handled the same way as always.

You can't count on the source code program to continue. Microsoft has a history of cutting off source code availability when it no longer suits Microsoft's purposes.

And of course, you can't count on Microsoft's .Net Linux support to do everything the Windows version does — or everything you'd want it to do.

What you *can* count on is that Microsoft isn't really confused about open source.

Microsoft believes that giving customers a peek at source code and connecting with Linux is a way of selling more software.

And open source or "open source," that's the Microsoft way. ◗

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

MANUFACTURING DIVISION of a big conglomerate spends $250,000 on a Web site to show off its product line to customers and distributors and issues laptops to all outside salespeople so they can use the site to display new products. "Our local rep comes by to show us all the new stuff," says a pilot fish, "but he can't log on to the Net." A quick call to the help desk explains why: "We don't want the outside reps surfing," says the IT guy, "so your laptop isn't Internet-ready."

CONSTRUCTION equipment maker is putting new PCs on the factory floor. "Knowing the workers on the floor had little computer experience, we spent the extra money for touch-screen monitors," says a pilot fish. But when equipment arrives and is ready to install, the bigwigs decide to protect their investment from the dirty hands of the factory workers – by putting each monitor in a locked glass cabinet.

PUBLISHING COMPANY'S IT director pilot fish gets a call from the big boss's secretary: "There's a problem with the royalty report." I'll be right down to look at it, fish says. "Oh no, you can't look at this report," says the secretary. "It's for the boss's eyes only!"

PHARMACEUTICAL company boss puts a short deadline on a hot project: making the division paperless. The team puts in lots of late nights to put documents and forms on the intranet, coordinating with the owners of the documents and setting up the process for making all future items go online. "And the thanks from management for finishing the paperless project on time?" grumbles a pilot fish on the team. "A paperweight with the company logo."

When the Naked Wife virus – the one promising a picture of, what else, somebody's naked wife – first turned up at a big financial company, one IT pilot fish got a panicked call from a departmental admin: "I got this message from my ex-husband!" Right reaction, wrong reason. Send me your wholesome, fully clothed stories of IT-shop life: **sharky@computerworld.com**. Don't forget, you get a sharp Shark T-shirt if your true tale sees print. And remember to check out the blood in the water every weekday on the Web at *computerworld.com/sharky.*

The 5th Wave

E-mail richtennant@the5thwave.com

"Honey – remember that pool party last summer where you showed everyone how to do the limbo in just a sombrero and a dish towel? Well look at what the MSN Daily Video Download is."

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